

# ARIZONA MEDICINE

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# ARIZONA MEDICINE

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## *Original Articles*

### THE DIAGNOSIS OF ACUTE CHEST PAIN\*

By Henry Brainerd, M.D.

San Francisco, California

ACUTE chest pain requires immediate, accurate diagnosis. Serious lesions must be recognized and treated appropriately to minimize danger to the patient's life. On the other hand, since patients are wont to believe that all chest pain is of cardiac origin, avoidance of producing cardiac neurosis by mistakenly diagnosing chest pain of less serious origin as due to the heart is almost equally important.

A painstaking history is of great value in the differential diagnosis of chest pain. The character, distribution, apparent inciting cause, and relation to respiration and position must always be elicited, as must a history of previous chest pain. Physical examination, even when carefully performed, at times may be negative. X-ray films, electrocardiograms and other laboratory procedures should be used in discriminating fashion. Even in urgent situations a systematic approach is desirable, although relief of severe pain and shock must at times take precedence.

By far the commonest pain of cardiovascular origin is that due to coronary artery disease. It is important to differentiate among angina pectoris, coronary insufficiency, and myocardial infarction. The character of the pain is similar in all three. It is usually described as squeezing, crushing, constricting, or burning. The pain is usually located beneath or just to the left of the sternum, but may radiate across the chest, to the neck, jaw, shoulders, one or both arms, or epigastrium. Characteristically, the pain of angina pectoris is the least severe and of the briefest duration. Persistence over 10 minutes should arouse suspicion of coronary insufficiency or myocardial infarction. Angina is typically precipitated by effort and occurs during activity rather than afterward. Almost invariably the patient will voluntarily cease the inciting activity until the pain subsides. Excitement, exposure to cold, disturbing dreams and heavy meals may also induce anginal distress. While nitroglycerin will usually relieve the pain of angina pectoris,

\*From the Department of Medicine, University of California School of Medicine, San Francisco, Calif.

so also will it occasionally be effective in pains of other origin. The electrocardiogram may be negative. Pain of similar character persisting more than a short time may be due to myocardial infarction or coronary insufficiency. A history of angina pectoris, often recently increased in frequency and severity, may frequently be obtained from patients suffering from myocardial infarction. If significant hypotension, pericardial friction rub, fever, leucocytosis, acceleration of the sedimentation rate, and elevation of serum oxalacetic transaminase or lactic dehydrogenase levels occur in association with serial changes of the electrocardiogram, myocardial infarction may be diagnosed. If following persistent anginoid pain unrelated to exertion, electrocardiographic alterations of brief duration are the only laboratory abnormality, coronary insufficiency without infarction may be assumed. Differentiation between myocardial infarction and coronary insufficiency may be difficult, because many of the confirmatory phenomena may be lacking in the former.

While simple aneurysm of the thoracic aorta may produce constant or recurring pain due to pressure on other structures, dissecting aneurysm usually produces acute, severe chest pain. Dissecting aneurysm is most likely to occur in hypertensive or pregnant persons. The pain is usually described as tearing or crushing and is located substernally, over the anterior chest or upper abdomen. Radiation, often progressive, to the back, neck, upper extremities and lower extremities, may occur. The simultaneous presence of chest pain and neurological symptoms and signs, especially unconsciousness, should arouse suspicion of this condition. Alterations in the pulse and blood pressure of one or more extremities may be observed. The sudden development of aortic insufficiency denotes retrograde dissection. Pulsation of the right supraclavicular joint may be observed. Chest x-ray may reveal alteration in the aortic shadow. While abnormalities of the electrocardiogram are commonly present, those typical of myocardial infarction are uncommon.

Pain resembling angina pectoris in character and inciting cause may occur in the presence of pulmonary hypertension due to such causes as mitral stenosis, interatrial septal defect, and pulmonary arteriolar sclerosis. Such an etiology of effort pain, relieved by rest, should be sus-

pected in the presence of lesions producing pulmonary hypertension. The pain is not usually relieved by nitroglycerin, but may be ameliorated by oxygen. The pain of massive pulmonary embolism, often associated with shock and dyspnea, is often mistaken for that of myocardial infarction. The true nature of the pain may be suspected if there is evidence of peripheral phlebothrombosis. Pulmonary embolism is most likely to occur in seriously ill patients after surgery, after myocardial infarction, and in the presence of congestive heart failure. The pulmonary second heart sound may be accentuated; the neck veins may become distended and the liver engorged. Later, or if the embolus is relatively small, pleural pain, hemoptysis, and slight icterus may occur. The electrocardiogram may reveal the pattern of right ventricular strain, although the abnormalities are usually transient. Secondary myocardial infarction or atrial fibrillation may occur to confuse the diagnostic picture. Chest x-rays are very often negative or inconclusive.

The pain of acute pericarditis is commonly mistaken for that of myocardial infarction. The pain is generally precordial or substernal in location, and often radiates to the back, neck, shoulder, upper arm or abdomen. The pain may be accentuated by respiration, swallowing or movement, and may be relieved by sitting upright. Fever and a pericardial friction rub are often present from the outset, in contrast to myocardial infarction where these manifestations are generally delayed. The electrocardiograph usually assists greatly in differentiation. X-ray of the chest is helpful only if pericardial effusion occurs, under which circumstances enlargement of the area of cardiac dullness, pulsus paradoxicus, and increased venous pressure may be observed.

The pain of pleurisy is rarely mistaken for that of any other origin. Accentuation by respiration, coughing, or movement is characteristic. It is important to recall that the pain of diaphragmatic pleurisy is referred to the neck and shoulder or upper abdomen. Splinting of the chest and pleural friction rub may not always be observed, but if present are diagnostic. The many possible causes of pleurisy must be considered.

Spontaneous pneumothorax may produce



severe chest pain and dyspnea. The pain is most commonly, but not invariably, pleuritic in type. Examination of the chest usually reveals deviation of the mediastinum, hyperresonance, and diminished breath sounds, but may be unrevealing. Chest x-ray is usually diagnostic.

Mediastinal emphysema may cause chest pain resembling that of myocardial infarction. Dyspnea and cyanosis may be present. Subcutaneous emphysema may be a late sign. The "cement-mixer" sound heard over the sternum or precordium is pathognomonic. X-rays of the chest, especially the lateral views, usually reveal air in the mediastinum.

Pleurodynia should be diagnosed with caution in the absence of an epidemic. Sudden severe pain in the chest or upper abdomen, worsened by movement or respiration, associated with fever may cause confusion with other conditions. The symptoms may abate in a few days, only to reappear after a short interval. Rarely, a pleural rub may be heard. The isolation of Cocksackie virus (type B) or the development of neutralizing antibodies against this virus may confirm the diagnosis.

While the pain of esophagitis, cancer of the esophagus, and cardiospasm is recurrent and often related to ingestion of food, hiatus hernia may occasionally produce acute, severe pain in the chest, left shoulder, and upper abdomen which mimics that of myocardial infarction. Abnormalities of the electrocardiogram are also occasionally observed. Relief may be obtained by change of position, especially sitting upright. It must be recalled that the mere demonstration by x-ray of a hiatus hernia does not certify that it is the source of symptoms, since many hiatus hernias are asymptomatic.

Acute mediastinitis is an uncommon cause of chest pain, often radiating to the back and shoulders. Signs of infection are present. X-ray may reveal a widening mediastinal shadow.

Pain due to radiculitis caused by lesions of the spine, most frequently osteoarthritis, commonly imitates other types of chest pain, and may be felt only anteriorly. Hyperesthesia of the involved area, best brought out by pinching the skin, is of great aid diagnostically. Alteration of the pain by change in position is very frequent. The pain is often worse during the night. X-rays of the spine may reveal the cause.

It must be remembered that the pain of herpes zoster may precede and succeed the characteristic eruption. Intercostal neuritis produces a similar type of pain.

Persistent chest pain commonly is observed following myocardial infarction, and is often ascribed to extension of the infarct or to pulmonary embolism. Radicular pain is frequent in these circumstances, but occasionally such pain may be due to inflammation of the muscles of the chest from unknown cause.<sup>(1)</sup> Local tenderness of the muscles is suggestive of this lesion.

Pain originating below the diaphragm may be located in the chest. Acute cholecystitis, pancreatitis, ruptured peptic ulcer, or distention of the splenic flexure of the colon with gas may produce symptoms principally referable to the chest, although their true origin is usually apparent after careful history, examination and appropriate laboratory studies.

Among the commonest causes of chest pain, more likely to be recurrent and mild than acute and severe, is neurocirculatory asthenia. The pain is usually precordial rather than substernal, and often is localized to a small area. It may be a prolonged dull ache or a sharp stabbing pain synchronous with the heart beat. While the pain may occur during exertion, it usually persists long afterward, and, in fact, commonly appears after exertion is over. Anxiety, hyperventilation, dizziness, and vasomotor instability are very frequent accompanying manifestations.

Erroneous diagnosis of such symptoms as of cardiac origin may doom the patient to a life of cardiac neurotic invalidism. Minor alterations of the T waves of the electrocardiogram may be observed in anxiety states and must not be mistaken for the changes due to coronary artery disease.

#### SUMMARY

Pain in the chest may arise from many causes of varying seriousness. It is of utmost importance that the correct diagnosis be made quickly by means of careful history-taking, discerning physical examination, and discriminating selection of appropriate laboratory procedures.

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## THE CLINICAL USE OF QUINIDINE

By A. W. Gaudielle, M.D.

Thomas-Davis Clinic, Tucson

**Q**UINIDINE is a vital drug in the treatment of cardiac arrhythmias. Like many therapeutic agents that are effective in serious disease, it is also a dangerous drug if misused.

Most practitioners have to rely upon the conclusions of those who have had extensive clinical and experimental experience with quinidine. However, conclusions as to the clinical use of this important drug have often been controversial. This paper is an attempt to formulate what I feel to be a concise and logical program for the clinical use of quinidine. It is a compendium of the conclusions of many leading workers in the field.

### CLINICAL PHARMACOLOGY

The reader is referred to an adequate text for the formalized pharmacology of quinidine. The following are the important clinical features that are essential for the effective use of this drug:

(1) *Method of Action:* There is no evidence, contrary to the widely prevalent conception, that the drug is a "protoplasmic poison" when used in therapeutic doses for the treatment of cardiac arrhythmias. Like many drugs, the effectiveness of quinidine has been determined empirically. Only recently have workers gained some insight into its basic mode of action in the tissues. It is sufficient to say that it may work by depressing oxidative metabolism, or it may interfere with processes requiring acetylcholine. The exact method of its action is not yet known.

(2) *Cardiac Effects:* More is known about the clinical effects of quinidine on the heart muscle. It has two basic actions: (a) indirect, and (b) direct.

(a) The indirect is a blocking action on the cardiac vagal system. By this "vagolytic" action, the effective refractory period is increased, and conduction is slowed in the auricle. Also, the sino-atrial node is thus partially relieved from vagal slowing effects, and with a normal sinus rhythm, the pulse rate may increase under therapy. Likewise, the atrioventricular node is partially relieved from vagal inhibition, and

conduction of impulses tends to increase through this junctional tissue. This accounts for the often seen increase in ventricular rate when an atrial arrhythmia such as atrial flutter or fibrillation is being treated with quinidine alone. Under treatment, before the arrhythmia is terminated, the degree of atrioventricular block may be decreased, and as the atrial rate is slowed by the direct action of the drug, the ventricles may respond to more impulses — in flutter, for example, in a 1:1 or 2:1 fashion from a previous higher block. The resultant ventricular tachycardia can be very dangerous to an already weakened heart.

It is to be recalled that digitalis has an opposite effect by causing vagal stimulation which diminishes conductivity or sets up a partial block in the atrioventricular node. Thus, it will interfere with the production of rapid ventricular responses. This is a major argument in favor of previously digitalizing patients who are to be treated with quinidine for atrial fibrillation or flutter. However, overdigitalization is to be scrupulously avoided, since this may cause atrioventricular block — and as explained below, increase the possibility of ventricular standstill or fibrillation being caused by quinidine.

The indirect vagal inhibiting effect on the heart does not extend into the ventricles, since few or no vagal fibers reach below the atrioventricular node.

(b) The direct action of quinidine on atrial and ventricular myocardial tissue also increases the refractory period, slows conduction, and decreases myocardial irritability. It appears to have a strong, quite selective action on ectopic and tachysystolic areas throughout the heart, in suppressing the firing of abnormal stimuli. Clinically, this is the most important effect. It is also effective in abolishing the Wolff-Parkinson-White syndrome by delaying conduction through the bundle of Kent. (However, in this syndrome treatment is not required unless paroxysmal tachycardia supervenes.) Many myocardial manifestations may occur during therapy. Prolonga-

tion of the Q-T interval, and slight RS-T abnormalities, an exaggerated U-wave which fuses with the preceding T-wave are among the earliest changes seen in the electrocardiograph.

Widening of the QRS due to diminished speed of electric impulse conduction is an important electrocardiographic effect. This is usually due to the production of a bundle branch block, or delay of stimulation of the free ventricular walls at Purkinje's network.

Various degrees of atrioventricular block may be produced. The drug may cause serious ventricular arrhythmias, and due to suppression of normal and idio-ventricular pacemakers, cardiac standstill.

Some of these myocardial changes may be expected at a safe therapeutic level, and some are serious toxic manifestations that demand immediate cessation of therapy. They are discussed in further detail below.

(3) *Systemic Effects*: Cinchonism may occur with tinnitus, temporary decrease in hearing, giddiness and weakness. This is usually mild and thus not serious, and if the disorder warrants further therapy, it is not a contraindication to stop medication.

It may cause a feeling of generalized warmth, excessive sweating, nausea and vomiting. On smaller doses, the gastrointestinal symptoms may be controlled by taking the drug with food, or changing to intramuscular administrations. On larger doses and higher plasma levels, these symptoms are due to central nervous system action, and will persist regardless of the method of administration. These side effects normally are not serious, and do not constitute an absolute contraindication to further treatment.

In instances of severe toxicity, generalized convulsions may occur. This is very rare.

Another very rare complication is severe respiratory depression. This is due to central action, and may occur on small doses as an idiosyncrasy, long before significant myocardial effect has occurred. If such is the case, artificial respiration, a free airway, and oxygen are then vital until enough of the drug is metabolized.

The drug has a "spasmolytic" action on smooth muscle and causes peripheral vasodilation and hypotension. This is usually mild and incon-

sequential on therapeutic doses given by mouth or intramuscularly. It is most marked when the drug is given intravenously, and serious collapse can occur. The hypotensive effect seen on I. V. administration is more directly related to the speed of injection rather than the therapeutic plasma level of the drug. Therefore, it should be given very slowly intravenously, and (by any route) adequately frequent blood pressure determinations should be made concurrently. The intravenous route should be used only for emergency situations. If serious hypotension should occur, norepinephrine given intravenously is indicated.

Drug fever has been reported, usually occurring a few days after beginning treatment, or after resuming therapy following a short period of rest.

Other systemic effects of an allergic nature have been reported. Thrombocytopenia with purpura is always mentioned, although it is extremely rare. This can occur at any time while the drug is being administered — on small or large doses. It is theorized in this situation that quinidine acts as a haptene, and thus induces a state of sensitivity. Antibodies are then formed, and the shock tissue is the platelets, which apparently undergo lysis in a very short period of time. This causes the sudden appearance of purpura; the tourniquet test becomes positive; and clot retraction is inhibited.

Agranulocytosis, neutropenia and aplastic anemia have also been reported, but also are very rare.

Urticaria and a variety of allergic skin lesions may occur, likewise rarely, and on any dose.

(4) *Synergistic Action of Other Drugs*: There are many drugs that fall into this classification. The more commonly used preparations are:

*Procaine Amide (Pronestyl)*: This drug has amazingly similar pharmacological properties in all important respects. In some urgent situations, if the use of quinidine fails, Pronestyl will have to be tried with exactly the same precautions and checks. They should not be used together, at the same time.

*Demerol*: Can markedly potentiate the action of quinidine, and dangerously so, especially if given intravenously. If narcotics or sedatives are required, I prefer the use of morphine or barbiturates during quinidine therapy.

**Papaverine:** Has many properties in common with quinidine.

**Atropine, Banthine** and related drugs are synergistic in respect to their vagal inhibiting effect.

**Atabrine:** Reported to be effective in the treatment of certain cardiac arrhythmias.

**Drugs of the antihistamine group:** quinidine has some antihistamine activity.

The first four categories are the most important. I prefer not to use them concurrently with quinidine, especially when they are used intravenously.

(5) *Absorption, Route of Administration, Metabolism and Excretion:* (a) Oral (Tablets 0.2 gm. — 3 grains): This is the choice route of administration. Absorption from the upper intestinal tract is rapid and complete. With recent improved fluorometric methods of determining plasma levels, it has been shown that after a single oral dose, peak plasma levels occur in about two hours, are maintained until four hours after administration, then decline rapidly. The tissue concentrations are much higher than the plasma level, but are roughly parallel to it.

Only 1 to 3 per cent of a given dose is recovered in the stools, and about 20 per cent is excreted in the urine. The remainder is metabolized rapidly in the body, presumably by the liver. However, in clinical situations, chronic hepatic and renal disorders are not a contraindication to the use of quinidine if the drug is necessary, since plasma levels in hepatic or renal insufficiency are not abnormally high.

It might be mentioned that in congestive heart failure, quinidine disappears from the blood more slowly, but the levels are the same.

The myocardial effect of quinidine in general parallels the plasma level. Plasma level determinations have shown that there is a homeostatic metabolic mechanism in the body that limits the level on various dosage schedules:

On a set dose given every two hours, the level climbs in a step-wise fashion, but with lessening peaks two hours after each dose for five doses. If the same dose is continued beyond this number, a plateau occurs — metabolic breakdown paralleling the intake, and no further increase occurring as long as the same doses are given. To increase the plasma level after the fifth or sixth dose is given, one must either increase the

dose, or give the drug at more frequent intervals, or give the drug in a "broken" schedule. By this last-mentioned schedule, after the last (fifth) dose is given, the plasma levels decrease rapidly, about a 40 per cent residual level of the previous peak level remaining 12 to 18 hours after the last dose; and a level near zero after 24 hours. If the same dose is resumed on a schedule every two hours after 12 to 18 hours' rest, a further increment will occur with a higher peak level after the fifth dosage, due to the residual level previously present. Apparently by giving the drug in this "broken" schedule, the homeostatic mechanism is upset, and progressively higher peak levels can be obtained.

When a set dose of the drug is given every 4 to 6 hours around-the-clock, the same mechanism occurs, but the plasma peak level is not reached until 2 to 5 days. After this period there will be no further increase in plasma levels, unless the dose is increased, or the drug is given more frequently.

These considerations become important when outlining a course of therapy. For example, to prevent premature contractions, the drug is given four times per day; if there is no therapeutic effect after five days, there is little likelihood of success unless the dosage is increased.

(b) Intramuscularly (Quinidine gluconate solution or quinidine gluconate 0.8 gm./10 cc. propylene glycol): After a single or repeated doses, essentially the same plasma levels are obtained as with the oral administration, the peak occurring earlier, in about one hour — but the decline being the same. Clinically, the doses are the same, and interchangeable with the oral route. The drug can be given intramuscularly in more urgent situations, or when the patient cannot take it by mouth.

(c) Intravenously (Quinidine gluconate solution): (or quinidine lactate) This method is recommended for use only in emergency situations. It should be given slowly, with very frequent blood pressure and electrocardiographic checks. Severe hypotension and peripheral vascular collapse may follow, and norepinephrine should be available. The peak level occurs in a few minutes, and falls rapidly after 5 to 10 minutes.

In the very occasional case, an arrhythmia may be resistant to large doses given by mouth, but respond to rather small doses intravenously.



Given by this route, it is hazardous at best; but it is safest given as a slow drip: one ampule in 50 to 150 cc. of 5 per cent glucose, and allowed to drip slowly, preferably at the rate of 1 cc. per minute; 2 cc. per minute in very urgent situations.

Constant auscultation and electrocardiographic checks (Lead II and/or V-1 usually suffice), and very frequent blood pressure determinations should be made. In this way one can stop the administration when the desired effect is seen, and there is less danger of sudden, alarming side-effects.

There are some who feel this method is actually less hazardous than intramuscular injections, given in the usual manner.

(6) *Plasma Levels, Electrocardiographic Changes, and Toxicity:* Since quinidine plasma levels are not universally available, it is useful to remember significant clinical symptoms and cardiographic changes that correlate fairly well with the plasma level.

Signs of severe toxicity usually do not occur until a plasma level of 7 to 10 milligrams per liter is reached.

Recent studies suggest that arrhythmias stop only at or above certain plasma concentrations. One reliable extensive study shows that auricular fibrillation converts at 5 to 7 milligrams/liter.

It is helpful to keep in mind clinical reflections of the various plasma levels:

Idiosyncrasies and allergic manifestations can occur at any plasma level. Therefore, it is wise to give a test dose of 0.1 gm., and wait one hour, if the situation is not urgent. If the situation is urgent, therapy can be started immediately — the first dose serving as a test dose.

Gastrointestinal symptoms are uncommon below a plasma level of 4 to 6 gm./liter, but may occur at this level. Usually, they are not a serious indication to stop therapy, unless intolerable to the patient, or are severe. Very occasionally severe vomiting or diarrhea after the first dose or few doses will preclude further treatment.

Hypotension of a mild degree, that is, a 10 to 20 mm. fall, is not uncommon on oral medication. Marked fall in the blood pressure usually occurs on high doses only, or on intravenous administration.

Electrocardiographic changes reflect the most useful and dangerous physiological effects of the drug. A full tracing is essential before therapy is started, for diagnostic purposes, and for later comparative use. After this, Lead II and/or V-1 is usually adequate in following the course of treatment. During intravenous administration, the lead wires are left attached and frequent short tracings will usually suffice.

Increase in the Q-T interval and slight RS-T abnormalities are the usual earliest changes. These may occur at relatively low plasma levels, and are not important signs of toxicity. Widening of the QRS is important, and in general a level of 7 mg./liter is approached before widening is marked. Occasionally there is no widening, even at high levels. An increase of the QRS by 25 per cent is considered within normal expectations. Above this it is an indication for considerable caution, especially as a 50 per cent increase is approached. A QRS increase of 50 per cent or above is an indication to stop therapy, and if necessary to try other forms of therapy.

Ventricular arrhythmias are considered a serious toxic change on *any dosage or schedule*, and any plasma level. Occasional premature ventricular contractions are not too important, and may be due to the underlying heart disease. Frequent premature ventricular contractions, short runs of premature ventricular contractions, or ventricular tachycardia are an indication to stop therapy or reduce the dosage. Premature ventricular contractions occurring on the *terminal downward limb* of the preceding T-wave are especially ominous, and suggest that ventricular fibrillation or asystole may be imminent.

On the following dosage schedules plasma levels may be anticipated:

(a) Oral or I. M.: Quinidine 0.4 gm. every 6 to 8 hours around-the-clock will give a peak in 3 to 5 days of about 3 to 5 mg./liter. Toxic effects are unlikely at this level. This is a commonly used dosage schedule in the treatment of minor arrhythmias; that is, premature atrial, nodal and ventricular contractions. It is also a useful schedule for maintenance therapy after an arrhythmia is treated; in this situation, a lower level is sufficient for prophylaxis.

Quinidine 0.2 gm. every two hours for five doses will give a peak level of about 3 mg./liter two hours after the last dose, and a residual of

1.8 mg./liter 12 to 18 hours after the last dose.

After 12 to 18 hours, quinidine 0.4 gm. given in this same way will give a peak of 6 mg./liter, and a residual of about 2.5 mg. A dose of 0.6 gm. given in this fashion gives a peak of 8 to 9 mg. with a residual of about 3.9 mg. The peak level on this schedule is a very effective one, but approaches the level of toxicity.

(7) *Contraindications:* Lesser degrees of atrioventricular block and incomplete bundle branch block are relative contraindications, but very careful checks are in order. Quinidine is not used in the presence of complete atrioventricular block. In this circumstance, even a single small dose can cause serious electrocardiographic changes, serious premature ventricular contractions, prolonged ventricular standstill, and runs of ventricular fibrillation with intermittent periods of ventricular asystole. (Essentially the same holds true for Pronestyl). The drug is also contraindicated in overdigitalization, subacute bacterial endocarditis, and complete bundle branch block. There is one exception, however: very occasionally atrial tachycardia may occur with a bundle branch block being present. Under the circumstances it may be impossible to determine electrocardiographically whether one is dealing with an atrial tachycardia plus a bundle branch block, or a ventricular tachycardia. It is generally felt that quinidine is the safer drug to use in this instance, rather than digitalis.

The drug is not used to treat sinus tachycardia.

Quinidine is probably contraindicated in large doses during pregnancy.

#### USES IN ARRHYTHMIAS

*Quinidine in the Treatment of Specific Arrhythmias:* Generally in the treatment of cardiac arrhythmias, emergency measures are rarely needed if the case is seen early. An exception occurs in ventricular tachycardia, in which instance there is usually serious underlying heart disease, and rapid control of the ventricular rate of the arrhythmia is indicated.

Quinidine should be used only when the diagnosis is certain. This invariably requires electrocardiographic confirmation.

(1) *Premature contractions:* Premature atrial, nodal or ventricular contractions usually do not require specific therapy. If the arrhythmia is excessively disturbing to the patient, and the

underlying cause cannot be found or cannot be eliminated, quinidine can be tried. One can start with a small dose, as 0.2 gm. every 8 hours, three times per day; and increase the dosage to 0.4 gm. every 6 to 8 hours after 3 to 5 days if there is no effect from the lower dosage. If the arrhythmia occurs or tends to be bothersome only at a certain time of the day, or under a known emotional or other circumstance, a single similar small dose about two hours before the usual onset will often suffice. Premature ventricular contractions are common in congestive heart failure, and in this instance control of the failure by the usual means is usually effective. Premature ventricular contractions occurring persistently during a fresh myocardial infarction may herald the onset of a serious ventricular arrhythmia, and should be treated with quinidine. Quinidine 0.2 gm. every 6 hours can first be used. If this does not rapidly control the arrhythmia, the dose should be increased to 0.4 gm. every 6 hours around-the-clock. The drug should not be given prophylactically during infarction if premature contractions do not occur.

Sedation is a helpful adjunct in controlling premature contractions, and may aid in decreasing the total amount of quinidine required.

Often the episodes of premature contractions will be absent for long periods, and recur frequently at other times. Once the episodes are well controlled, the drug is eliminated for longer or shorter periods of time, and resumed as needed.

(2) *Paroxysmal supraventricular tachycardia:* As a general rule, the seriousness of hemodynamic defect of any paroxysmal or permanent arrhythmia is reflected in the degree of increase of the ventricular rate above normal. Often the immediate desirable effect is not to dramatically convert the arrhythmia, but to first control the ventricular rate.

Paroxysmal atrial tachycardia is often benign, especially in the young or middle-aged with a normal heart. The usual methods of mechanical vagal stimulation are first adequately tried. If this is unsuccessful, a rapid-acting barbiturate to put the patient to sleep is often successful. Quinidine in a single 0.4 gm. (6 grains) dose with the usual soporific dose of a barbiturate will convert a high percentage in 2 to 3 hours. This can easily be self-administered, and is advantageous in those with recurring episodes. If

episodes recur very frequently, maintenance therapy with quinidine is indicated as described under "Atrial Fibrillation."

Many clinicians prefer the use of a rapid-acting digitalis preparation I. V. or I. M. (such as ouabain). This therapy is best used in the elderly patient; or when the above fails; or if the rate is very rapid so as to cause angina, congestive heart failure, or shock. (If given I. V., it should be given slowly with due respect to the potency of the drug.) Shock thus occurring should be concomitantly treated with norepinephrine. Vagal stimulation (such as carotid massage) may be successful following such therapy, if the digitalis alone is not shortly effective.

In those in whom attacks occur very frequently, especially in the elderly, and in whom digitalis therapy is successful, digitalization and maintenance on daily rations of digitalis is of great value.

If digitalis or a single quinidine dose is not successful, larger doses of quinidine are tried, i.e., 0.4 gm. is given very 2 hours up to five doses. A short ECG tracing of Lead II and/or VI is taken before each dose, and the blood pressure is recorded. In the rare case, a second similar course may be needed using 0.6 gm. each dose, with the realization that toxicity may be manifest.

In the elderly patient with a very fast rate, some feel the emergency to be acute enough to warrant giving digitalis and quinidine simultaneously intramuscularly.

In the infant, paroxysmal atrial tachycardia is serious, and I. V. digitalis is the treatment of choice in these cases when critical. I might add that quinidine has been used in various arrhythmias in infants and children, and may be calculated on the basis of 3 mg./pound body-weight, orally or I. M. every two hours, as in the adult case.

Some cardiologists feel that paroxysmal nodal tachycardia is relatively resistant to digitalis therapy. These maintain that quinidine is much more effective in this instance. The majority feel that supraventricular tachycardias, atrial and nodal, can be treated in the same way.

As a final caution, I would mention that digitalis toxicity can cause atrial tachycardia with atrioventricular block of various degrees (often 2:1). Here the atrial rate usually increases slowly

with block developing as the rate increases. In this case, quinidine is contraindicated, and potassium is the drug of choice.

(3) *Paroxysmal ventricular tachycardia*: This is usually seen in the diseased heart, and is so often fatal as to require immediate specific therapy. Supportive treatment is essential if the patient is in failure, or shock: that is, oxygen, or vasopressor agents — as the case may be.

Many cardiologists prefer intravenous or intramuscular procaine amide if the situation is urgent. There is no real evidence that it is absolutely more effective than quinidine.

It is to be remembered that a "kill-or-cure" attitude is not justified in the use of quinidine.

If quinidine is decided upon, and the situation is not very urgent, the oral (preferred) or I. M. route is used. It can be given as follows:

1.0.2 gram for the first dose (test); 0.4 gram in *one* hour; 0.6 gram *four* hours later; 0.8 gram *four* hours afterward, etc., increasing each successive dose by 0.2 gram until the arrhythmia is converted, or a single dose of 2.0 gram is reached. Larger single doses have been used, but toxic reactions are much more likely. A short ECG tracing, blood pressure, etc., is recorded *before* each dose is given, and therapy is stopped at any point if serious toxicity occurs. or 2. 0.4 gram every *two* hours for a total of six doses with ECG and the usual checks before each dose. An alterate of this method which will give a slightly higher plasma level is: 0.4 gram every *two* hours for three doses with the usual precautions, followed by 0.6 gram every *two* hours for three more doses. Occasionally, a course of 0.6 gram every *two* hours is given from the start if the case is more serious.

On either plan, therapy is discontinued at any point when conversion occurs. Maintenance therapy should then be continued.

Parenteral quinidine is preferably given I.M., and is usually adequate even when failure is appearing.

If these fail, procaine amide can be tried with exactly the same precautions.

Intravenous quinidine has been used successfully, but is recommended only in the most urgent situations. It should be given by a slow I.V. drip, as described above.

It is to be remembered that during quinidine

therapy in this arrhythmia, the ventricular rate must be watched closely. As treatment progresses, the ventricular rate may slowly diminish. Conversion tends to occur at rates below 140. Very occasionally, rates of 120 to 110, or even 60 to 70/minute, will be seen without evidence of auricular activity. This signifies that the normal pacemaker has been suppressed by the tachycardia or the drug. If such is the case, further administration at similar or increasing doses may depress the ectopic pacemaker progressively and leave the heart with no pacemaker at all. In such an instance, reduction of the dosage or lengthening of the time between doses is indicated, and the drug continued to maintain a relatively slow ventricular rate, at about 90 to 100. This will keep the patient out of danger, and frequently at the lower ventricular rate, and with supportive therapy as indicated, the normal pacemaker activity will be resumed and conversion occur.

Fortunately, such a situation is rare, since the action of quinidine is usually selective on the ectopic pacemaker, and the normal pacemaker takes over quite suddenly.

After conversion, maintenance therapy is indicated.

Since the arrhythmia is a serious one, when the probability of an attack is evident (that is, frequent premature ventricular contractions, or short runs of ventricular tachycardia), prophylactic therapy should be started.

(4) *Atrial (auricular) Flutter*: Quinidine can be used first in this instance, only with acute onset, if the heart appears not to be seriously diseased, and failure is not present — and preferably in the young or middle-aged. The attack can be treated as the paroxysmal tachycardias. If during therapy the ventricular rate increases suddenly and endangers the patient, rapid digitalization is indicated. If the paroxysmal attack is easily converted but tends to recur, maintenance therapy is used.

If the flutter is chronic, failure occurs, or the initial ventricular rate is high; if angina or shock is present, or if the patient is elderly, digitalis is the drug of choice. This will control the ventricular rate (occasionally a normal sinus rhythm will occur), and can thus be maintained. Often on digitalis, atrial fibrillation will ensue and conversion by quinidine may be considered

as below.

(5) *Atrial (auricular) fibrillation*: Since World War II, there has been much renewed interest in the conversion of this arrhythmia to a normal sinus rhythm. There is still wide divergence of opinion as to the advisability of converting those with long established fibrillation.

Conversion is not considered in the elderly patient with a severely diseased heart; in the patient with a greatly enlarged heart; severe mitral stenosis with a greatly enlarged left auricle; auricular fibrillation which has relieved angina pectoris; thyrotoxicosis; conduction defects as above-mentioned; congestive heart failure; and over-digitalization.

The chief advantages of conversion of auricular fibrillation are:

(a) A demonstrated increase of cardiac output of 20 to 40 per cent after conversion in the heart which has compensated maximally while fibrillating. This is usually attended by clinical improvement, increased exercise tolerance, etc.

(b) The decreased risk of sudden death placed at 2.5 to 4.0 per cent or higher, while fibrillating.

The much stated risk of sudden embolization at the time of conversion has probably been over-emphasized with present-day selection of patients, and careful use of the drug.

There is increasing prevailing opinion in favor of conversion when the fibrillation is of recent onset, especially if there is no evidence of cardiac disease.

Use of the drug is also being favored in acute or established fibrillation regardless of duration, if there is no significant heart impairment; and if no other contraindication as mentioned previously exists.

A third situation which favors consideration for conversion are those patients who have repeated emboli. In this instance, the death rate from sudden embolization is very high, or permanent disability — for example, hemiplegia — is common. Conversion will tend to prevent further thrombus formation and subsequent embolization. The risk of embolization at the time of conversion is 1 per cent or less.

Conversion is also attempted in the patient with adequately treated and controlled thyrotoxi-



cosis in whom auricular fibrillation persists.

Another indication for conversion is postcommissurotomy fibrillation. Frequently, in the first 7 to 10 days postoperative period of mitral commissurotomy, atrial fibrillation will occur. Many will revert to normal, spontaneously. Therefore, in this situation conversion would preferably not be attempted until 10 to 14 days postoperatively.

Very rarely a situation may occur in which the acute onset of fibrillation, or for that matter flutter, may cause shock. Rapid digitalization is then indicated; but in the very occasional case, the ventricular rate may not be controlled. The situation is then urgent and conversion should be attempted.

Rarely, atrial fibrillation may not be controllable by digitalis if the bundle of Kent or Wolff-Parkinson-White's syndrome is operating. Quinidine may be used to advantage in this problem.

A rare patient may be so disabled by the palpitation alone produced by the fibrillation, though otherwise adequately controlled, that conversion may be attempted.

One last indication for attempt at conversion is the rare patient with intractable failure due to severe heart damage, in whom *maximum* treatment has failed to further benefit the condition. Here it may be attempted to prolong life and promote comfort, but with considerable risk. The percentage of conversions in these instances is low, and it is difficult to maintain a sinus rhythm.

Successful conversion in a large group of selected patients might be expected to run 80 to 85 per cent. In mitral stenosis, the percentage runs around 50 per cent, and these cases are more difficult to maintain in sinus rhythm.

There is still controversy over whether digitalis and quinidine should be used simultaneously, at all. In the occasional young patient especially with acute or paroxysmal fibrillation, with a sound heart, conversion may be attempted without prior digitalization. In the majority, I feel careful digitalization is indicated to control the ventricular rate before quinidine is used. The person is continued on daily ration maintenance digitalis during quinidine therapy.

All other means to obtain adequate compen-

sation are also used prior to quinidine therapy and continued as indicated. The patient should be afebrile, and any other serious illness evaluated. Freedom from apprehension is very important, and moderate barbiturate sedation is very helpful. All conversions should be attempted only in bed in the hospital, and with check-ECG readily available.

**Method:** A test dose is given the evening before. The following morning, a full ECG tracing is obtained, and blood pressure, apical rate and pulse rate are recorded. The first dose is given conveniently at about 8 a.m., and the same dose is repeated every two hours for a total of five doses, the last at 4 p.m. The blood pressure, apical rate, and pulse rate are recorded before each dose. If at any time during the therapy the rhythm becomes regular, or any remarkable change occurs, the ECG tracing is made immediately (Lead II and/or V-1 usually suffice). A moderate dose of a sleeping preparation can be given at bedtime. The following morning, and each morning of therapy, an ECG (Lead II and/or V-1) is done and evaluated for evidence of toxicity, rhythm, etc., *before* the therapy is again resumed in the same fashion, with the same observations before each dose as mentioned above. This is repeated each day as the therapy is continued.

**Dosage:** In elderly patients, or in those whom it is thought conversion may occur easily, 0.2 gm. of quinidine is administered every two hours, but is not likely to be effective. This may be repeated on the second day with a resulting higher blood level. If conversion has not yet occurred, 0.4 gm. is given every two hours the following day, and repeated on the fourth day. By this time, one will be reaching the level at which conversion will usually occur. If conversion has still not occurred, and there are no signs of severe toxicity, 0.6 gm. can be given on the fifth day. On the 0.4 gm. schedule, many will convert. On the 0.6 gm. schedule, the majority who are able to do so will convert (estimate 80 to 90 per cent, in one large series).

If there is still no conversion, the 0.6 gm. dose is repeated each day in the same fashion for a total of three days. After this period of treatment, if conversion has not occurred, there is little likelihood of success. However, if there is no evidence of serious toxicity, prolonged QRS, premature ventricular contractions, severe

nausea, vomiting, diarrhea, hypotension, etc., and if conversion is urgently required, 0.8 gm. every two hours can be tried, but must be used with considerable caution. If plasma levels are available, and are still low owing to poor absorption, intramuscular administration or larger oral doses may be used. On these doses, it is wise to get a short ECG tracing preceding each dose. Individual dosages as high as 1.0 gm. and 1.2 gm. have been used in exceptional circumstances, and usually with plasma level determinations.

Some prefer to increase the dosage to 0.4 gm. on the second day and third day; or to start with 0.4 gm. every two hours on the first and second day, and increase to 0.6 gm. on the third day. This will give a higher plasma level quicker. Again, conversion will usually occur on the 0.6 gm. dosage.

A useful electrocardiographic guide during therapy is the often-seen gradual, progressive decrease in the atrial rate, with the appearance of what appear to be atrial flutter waves. It has been noticed that often conversion is nearly achieved when the atrial rate falls to 250 or lower, and continued treatment is usually successful. If conversion has not occurred before the atrial rate of 150 is reached, evidence of serious toxicity as described above is usually seen and quinidine is stopped. Occasionally, such a patient may convert during the night if a moderate dose of barbiturate is given at bedtime.

If for any reason the course of therapy is stopped and another attempt is considered, the drug should be stopped for the intervening day to allow the plasma level to fall to zero.

After conversion, maintenance therapy is started six hours after the last effective dose of the therapeutic regime, or slightly later if the P-R is prolonged directly after conversion. Those converted after acute fibrillation with no evidence of heart disease are maintained for four weeks, then gradually reduced over two weeks, and finally omitted. Conversion after chronic fibrillation or with significant heart disease must be maintained indefinitely. Those who require small doses to convert can be maintained on 0.2 gm. every six hours around-the-clock. A schedule of 0.4 every eight hours — or every six hours — is a more desirable dose and will maintain the majority.

If for any reason fibrillation recurs, recon-

version may again be attempted, and most will reconvert on the same dosage that was successful previously. Slightly larger maintenance doses may then be indicated.

In conclusion, it is apropos to mention the treatment of serious quinidine reaction.

There is no specific antidote to quinidine, a fact which dictates careful control of dosage, and checks.

If the unfortunate situation does appear, treatment is aimed primarily at tiding the patient over until the metabolic breakdown of the drug has occurred.

If sudden depression of the heart occurs, it is usually due to cardiac arrest, or ventricular fibrillation.

Cardiac massage is the best emergency treatment for cardiac arrest, but usually such accidents occur where and when there are no facilities for adequate, immediate treatment. In this case, intracardiac epinephrine has been suggested as the only possible treatment in most cases. Cardiac arrest and ventricular fibrillation are impossible to differentiate with the stethoscope, and epinephrine would be contraindicated in fibrillation. But one must make the proverbial best of a bad situation, and if massage or electrical defibrillation is not immediately available, the chances are thus a little better to treat with epinephrine.

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## SURVEY OF HUMAN ALLERGY TO NORTH AMERICAN SNAKE VENOMS

By Henry M. Parrish, M.D., M.P.H.\*

New Haven, Connecticut

MANY animal proteins are known which produce allergy in humans. Horse serum used in manufacturing biologicals may produce serum sickness and anaphylaxis in man. Deaths have resulted from allergy produced by the bites of ants and spiders, and the stings of bees, wasps, and yellow jackets.(1) Some authors have suggested that occasional deaths from snake venom poisoning are due to allergy, but a search of available literature reveals only four cases in which allergy to the venom of North American snakes have been confirmed. Zozaya and Stadelman,(2) using scratch tests, demonstrated allergy to snake venom in a male who had been injected with several kinds of venom for experimental purposes and later developed coryza and sneezing when working around dried snake venom. Lounsberry(3) reported a patient who developed anaphylaxis and a generalized dermatitis when bitten by a rattlesnake. He attributed this allergy to a previous snakebite which had rendered the patient hypersensitive to the venom. Recently Parrish et al.,(4) reported two additional cases of hypersensitivity to North American pit viper venom which were confirmed by scratch tests.

Since snake venom is a complex organic substance comprised chiefly of proteins, there is the possibility of developing hypersensitivity to it. The purpose of this study was to determine how frequently venom allergy develops in persons who have been previously bitten one or more times by pit vipers.

### MATERIALS AND METHODS

The 30 patients, with a history of previous poisonous snakebite, who were tested in this study, live in Florida. The majority, 16, of them are professional herpetologists, reptile exhibit

lecturers, or amateur snake collectors. The remaining patients have various occupations and were traced from hospital records. The poisonous snake responsible for the envenomation in 25 patients was definitely identified; the remaining five patients had clear-cut signs and symptoms of pit viper envenomation, although the offending reptile was not identified. With the exception of one Negro, all of the patients were white. There were 28 male and two female patients. Each patient was carefully interviewed by the author to elicit a history of envenomation. Hospital records were used in most instances to confirm the history and physical findings. Several other patients were interviewed who gave a history of poisonous snakebite without accompanying symptoms of envenomation; they were not included in this survey. Is it possible for a poisonous snake to bite a person without injecting enough venom to produce clinical symptoms. Only patients with confirmed North American pit viper venom poisoning were studied. Thirteen of the patients had experienced two or more episodes of envenomation and 17 patients had only one previous envenomation.

Scratch tests, using fresh undiluted cottonmouth moccasin (*Agkistrodon piscivorus*) and Eastern diamondback rattlesnake (*Crotalus adamanteus*) venoms, were performed on all the patients. In my experience, scratch tests are more reliable than patch tests for detecting hypersensitivity to snake venoms. Intracutaneous tests were not employed, since snake venoms contain many pathogenic bacteria — especially, enteric and gram negative organisms.(5) It seemed unwise to expose these patients to the possibility of an infection by using intracutaneous injections of venom. Fresh, undiluted venoms, instead of diluted solutions of crystalline venom, were employed, since fresh venom would more closely simulate actual envenoma-

\*Fellow in Epidemiology, Department of Public Health, and Physician, Department of University Health, Yale University, New Haven, Conn.

tion in nature. *Crotalus adamanteus* and *Agkistrodon piscivorus* venoms were selected because they are representative of pit viper venoms. The venoms were obtained from Ross Allen's Reptile Institute, Silver Springs, Fla.

The technique used for the scratch tests was to clean the inner aspect of both the patient's forearms with an alcohol sponge, and make superficial 4-6 mm. long scratches with a Number 11 Bard-Parker scalpel blade. Cottonmouth moccasin venom was applied to one forearm and rattlesnake venom was applied to the opposite forearm by dipping a toothpick in the venom and painting the scratch lengthwise. Less than a drop of venom was used on each scratch. The tests were read 20 minutes later. Twenty normal adult subjects with no previous history of snakebite or exposure to venom were also scratch tested to serve as a control group.

If a patient demonstrated a positive reaction to the scratch tests, additional positive evidence of allergy was obtained by means of a modified Praustnitz-Kustner test of local passive transfer of hypersensitivity. A modification of the technique described by Kolmer et al.,<sup>(6)</sup> was used. Briefly, 0.1 cc. of the patient's serum was injected intradermally into the forearm of a control subject, and 24 hours later scratch tests were performed over the injected area.

### RESULTS

Scratch tests were performed on 50 persons — 30 with a history of one or more previous pit viper envenomations, and 20 normal patients with no history of exposure to venom. No serious complications or ill effects were noted as a result of these tests. The wounds all healed in a normal fashion with no evidence of infection.

None of the control subjects exhibited signs of hypersensitivity; however, the venoms did produce a certain amount of irritation. There was a wide variation in the individual responses to the venoms. The response most often observed was a small wheal (without the presence of pseudopods) measuring about 7 x 10 mm. surrounding the scratch. This wheal, in turn, was usually surrounded by an area of erythema measuring approximately 10 x 13 mm. (See Fig. 1-A for the usual response in the control subjects.) The 20 control subjects reacted in one of four ways: (1) seven had a wheal with a large

surrounding area of erythema produced by moccasin venom, but only a wheal produced by rattlesnake venom; (2) six had a wheal and a large surrounding area of erythema produced by both venoms; (3) six had only a wheal with little or no surrounding erythema produced by both venoms; and (4) one had a wheal with a large area of surrounding erythema produced by rattlesnake venom, but only a wheal produced by moccasin venom.

With the exception of seven patients who demonstrated allergy to venom, the response of the patients with previous envenomations were similar to those of the control subjects. (See Table I for a comparison of the results of the scratch tests in the control subjects with those of the snakebitten patients.) These different types of response to venom cannot be attributed to inconsistency in technique, since the author carefully performed all of the scratch tests himself.

Three patients with one previous envenomation and four patients with two or more envenomations showed signs of hypersensitivity to pit viper venom. Of the hypersensitive patients with multiple envenomations, one had 12 poisonous snakebites, one had six bites, one had four bites, and one had two bites. In general, the scratch tests of allergic patients showed *larger wheals with pseudopods and more extensive surrounding erythema* than those of the control subjects and non-allergic patients with a history of envenomation. The presence of a wheal with pseudopods was the criterion for diagnosing allergy.

Each patient with a positive scratch test was also given a modified Praustnitz-Kustner test of local passive transfer of hypersensitivity. All of the Praustnitz-Kustner tests were positive. The areas on the forearms of the control subjects which were injected with 0.1 cc. of serum from the allergic patients and tested 24 hours later exhibited large wheals with pseudopods and extensive surrounding erythema. These reactions were entirely different from the control venom responses on their opposite forearms. The responses to venom after the serum injections were almost identical to the reactions of the allergic patients. (See Fig. 1, A, B, and C for a comparison of allergic with non-allergic reactions to scratch tests.)



TABLE I  
RESPONSES TO SCRATCH TESTS WITH SNAKE VENOM

PATIENTS	R > R	R > M	R = + R	R = + M	Allergy R or M	TOTAL
Control Subjects	7	1	6	6	0	20
One Snakebite	6	1	2	5	3	17
Multiple Snakebites	5	0	1	3	4	13
TOTAL	18	2	9	14	7	50

R - Rattlesnake venom

M - Cottonmouth moccasin venom

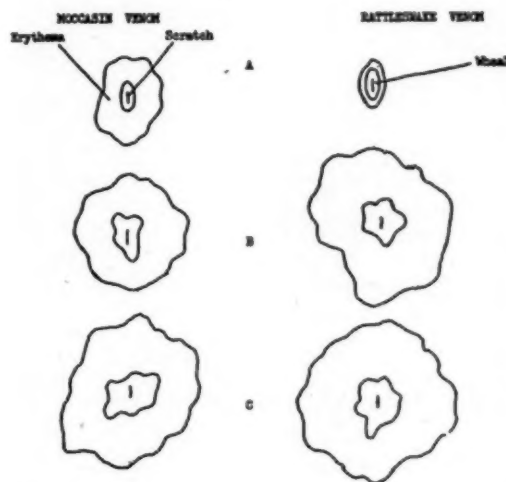


Figure 1. Responses to Scratch Tests with Snake Venom (Actual Size).

- A. Original response of control subject.  
B. Response of same control subject after injection of allergic patient's serum. (Prausnitz-Kustner test)  
C. Response of allergic patient.

## DISCUSSION

This survey of allergy to pit viper venom in 30 patients with one or more poisonous snakebites showed seven patients were allergic. The incidence of allergy was not significantly different in patients with one bite as opposed to those with more than one bite. Perhaps this high incidence of venom allergy, 23 per cent, can be explained by the small size of the sample and the fact that 13 of the patients had been exposed more than one time to venom. Neverthe-

less, allergy to venom is not as rare as it is generally thought to be. It seems reasonable that some patients with a previous envenomation may die from anaphylaxis when bitten again.

The individual variation of responses to the scratch tests was interesting. Perhaps this is related to the individual's general body defense mechanisms. Allam,(7) while studying experimental snake venom poisoning in dogs, noted that some dogs succumbed rather easily while others offered considerable resistance to the toxic components of venom. It would appear that this finding may apply to humans. The individuals who only developed small wheals with little or no surrounding erythema when venom was applied to a scratch may have a non-specific type of resistance to the small amounts of venom. Presumably, they would suffer less from an actual envenomation than the patients who had more reaction to the scratch tests.

Weiss(8) found that mice rendered hypersensitive to South American snake venoms may also exhibit hypersensitivity to the venom of a closely related species. This phenomenon was observed in the allergic patients studied here. For example, two of the patients were found allergic to rattlesnake venom, although their several bites were by cottonmouth and copperhead moccasins. Another patient was allergic to both cottonmouth moccasin and rattlesnake venom in spite of the fact that his one envenomation was by a copperhead moccasin. Still another patient was found allergic to Eastern diamondback rattlesnake (*C. adamanteus*) venom, but his envenomations were by other rattlesnake species (*C. horridus atricaudatus* and *C. atrox*).

The scratch tests were read 20 minutes after venom was applied. If one attempted to read the tests later, the reaction was too diffuse to measure accurately. Since pit viper venom contains "spreading factor," the venom was rapidly disseminated into the tissues. Duran-Reynals(9) demonstrated that lesions resulting from reactions between a normal and also a hypersensitive organism and certain agents (toxins and foreign sera) are spread through a much larger area if the agents are injected with testicle extract, which contains "spreading factor." He observed also that the Arthus and Schwartzman reactions were more diffuse and less pronounced when testicle extract was used. Nonetheless, on

the basis of positive scratch and Praustniz-Kustner tests, it is apparent that the seven patients described in this study exhibited hypersensitivity to snake venom.

Since allergy to North American pit viper venom is not too uncommon, and snakebite is an occupational disease among amateur and professional snake handlers, perhaps it would be beneficial for these individuals to be scratch tested for hypersensitivity to the venom of the snakes they are exposed to. At the same time they could be tested for allergy to horse serum so that antivenin therapy could be instituted without delay if needed for envenomation. If a patient allergic to venom was bitten again, then treatment might include epinephrine hydrochloride, antihistamine drugs, ACTH, and Cortisone. These drugs would be used to counteract the allergic effects of venom but *would not take the place of incision and suction or antivenin.*

#### SUMMARY

1. A survey of allergy to North American pit viper venom in 30 patients with one or more previous envenomations showed seven of them were allergic to venom. Scratch tests using fresh undiluted cottonmouth moccasin (*A. piscivorus*) and rattlesnake (*C. adamanteus*) venoms were used to detect hypersensitivity to venom. The

presence of hypersensitivity was confirmed by Praustniz-Kustner tests.

2. A patient may develop hypersensitivity to the venom of a snake which zoologically is related to the one which bit him. For example, a person may become allergic to rattlesnake venom if he was bitten by a cottonmouth moccasin.

#### ACKNOWLEDGMENT

The author expresses his appreciation to Mr. E. Ross Allen and Dr. Wilfred T. Neill of Ross Allen's Reptile Institute, Silver Springs, for supplying the venom used in this study.

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## *The President's Page*

**N**EWSPAPER headlines crucified a doctor in New York about his bill in a sensational case. It was even discussed on the floor of the U. S. Senate.

This was probably one of the worst mishandled cases of public relations I have ever heard. I believe the doctor should have talked over his bill with the parents of the child before presenting it; if found excessive either party could have submitted it to the Grievance Committee. This committee has available the facts and the knowledge of local charges to people of these circumstances.

The statement by Dr. Edward Hamilton, chairman of the board of trustees of AMA, was ill-advised. This was a local matter. He could speak for himself alone. Dr. Hamilton had no right to speak for AMA. To date we have no fee schedule forced down our throat from a national level, and I hope it never comes to that. Dr. Hamilton should have consulted the legal and public relations office prior to any statement.

No senator of the U. S. is in possession of all the facts in this case. Therefore, I believe they were out of line in making the statements they made for publication.

From this case, however, let us learn a lesson. Beware of talking for publication until we are in possession of *ALL* the facts. Then consult with our colleagues, especially members of the *PROFESSIONAL AND GRIEVANCE COMMITTEES*. A phone call will usually suffice.

Also, if a case demands a tremendous amount of time and scientific care and treatment, discuss the bill with the patient and/or the responsible party. Tell the people of the dangers, risks, skill exercised, etc., then they probably will agree that the amount is justified.

Think of the effect on you and your patients of this type of unfavorable publicity. If you think first, I am sure such things won't happen in Arizona.

CARLOS C. CRAIG, M.D.

PRESIDENT, ARIZONA MEDICAL ASS'N.

P.S. — Subsequent to submission of this article Dr. Lull's weekly Secretary's Letter stated that Dr. Hamilton had consulted the head office of AMA, public relations and legal, and phoned members of the board of directors prior to his statement to the press. It is still my belief that AMA should not try to dictate fees.

# Editorial Page

## ARIZONA MEDICINE

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
  2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
  3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
  4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
  5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
  6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
  7. Exclusive Publication—Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unused manuscripts.
  8. Illustrations—Ordinarily publication of 2 or 3 illustrations accompanying an article will be paid for by Arizona Medicine. Any number beyond this will have to be paid for by the author.
  9. Reprints—Reprints must be paid for by the author at established standard rates.
- The Editor is always ready, willing, and happy to help in any way possible.

(The Opinions expressed in original contributions do not necessarily express the opinion of the Editorial Board.)

## ORAL TREATMENT OF DIABETES WITH PILLS

MUCH space has recently been given, in both lay and medical publications, to create the impression that insulin and the needle can soon be thrown aside in the treatment of most our diabetic patients. These releases have carried quotations from our leading medical investigators which are as follows:

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At the present time it can not be said that any of the sulfonylurea drugs successfully control diabetes, at least as satisfactorily as does insulin. There are major differences in the actions of insulin and of the sulfonylureas. One of the major known differences is that insulin enhances the uptake of glucose by skeletal musculature which is an effect not produced by any other hypoglycemic drug. The new drugs are not "successful" in the management of the thin, ketone producing, severe or juvenile type, and is only "effective" in the obese, non-ketone producer or the mild, stable diabetic.

The effect of these new drugs on development of the complications of diabetes such as arteriosclerosis, cataracts and neurologic degeneration, is wholly undetermined. The use of the word "success" applies only to the hypoglycemic ac-



tion of Orinase in some patients, and it must not be construed to infer that, as has been stated, it controls the disease of diabetes mellitus.

A true evaluation of the hypoglycemic sulfonylurea drugs has been editorialized in the *Annals of Internal Medicine*, May 1957, and *Diabetes*, March-April 1957, issues. These editorials should be required reading before the prescribing of Orinase.

The editorial in the *Annals of Internal Medicine* by DeWitt Stetten Jr., M.D., Ph.D., states;

"The new agent must correct, as insulin does, the fundamental defects in metabolism which, taken together, comprise diabetes mellitus. This criterion, thus far, Tolbutamide has not been demonstrated to meet. Until the mode of action has been clarified, it will be very difficult, in the opinion of this writer, to know with assurance whether or not we are doing the diabetic patient a favor when we lower his blood glucose concentration by the administration of a drug of the sulfonylurea group. It remains for future experiment and observation to determine whether an oral replacement for insulin has indeed been found."

From the editors of *Diabetes* we quote: "It is deplorable that information has been disseminated to create the false hope that diabetes is now an easily controlled disease because "tablets" are available. Our sickest diabetics are in no way helped by these compounds. It is deplorable that some announcements of benefit have been based on short preliminary observation, . . . It is not yet in the interest of good medicine and well-being of diabetic patients to support the release for marketing of an 'insulin substitute' . . ."

"Because the complications of diabetes usually develop slowly, it will take many years, 15 or 20, to determine the effectiveness of any therapeutic antidiabetic agent. Insulin remains our best lifesaving therapeutic agent for the treatment of diabetes mellitus. Other drugs for the control of diabetes must remain in the hands of qualified research teams, to be proved by years of study." (*Arizona Medicine*, Nov. 1956).

L.B.S.

## WE WELCOME

THE staff of *Arizona Medicine* is pleased that the Medical Society of the United States and Mexico has designated this publication as its official journal. The articles submitted by *MSUSM*, with the co-operation of our publisher, Mr. McMeekin, and their chairman, Dr. M. Carreras, will be printed in Spanish or English, with a synopsis in the alternate language.

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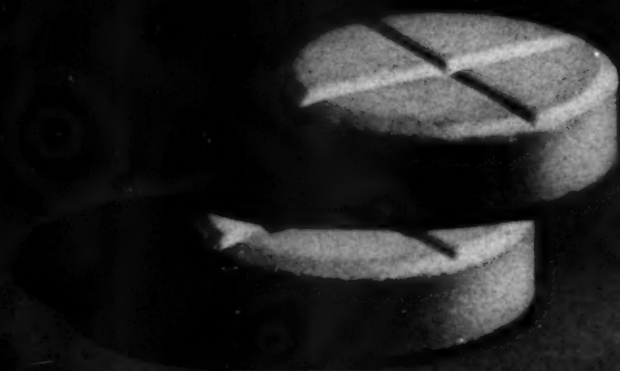
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(1) Boger, W. P.; Strickland, C. S. and Gylfe, J. M.: *Antibiot. Med. & Clin. Ther.* 3:378 (Nov.) 1956.

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## *The History of Medicine in Arizona*

### CO<sub>2</sub> POISONING

By N. C. BLEDSOE, M.D.

**I**N mining, timbers are used to catch up shifting ground to make it safe for the men to work. After working out a raise (a pocket of ore), that portion of the mine is abandoned; but the timbers remain, and, with the moisture and heat (sometimes 130°), a destructive distillation of the wood occurs and carbon dioxide results. Ordinarily it does not cause trouble, as the mines are well ventilated. Occasionally it becomes concentrated and causes trouble. On one occasion, in working an old portion of the mine, the miners had trouble, being overcome by the CO<sub>2</sub> gas. They did not notice the presence of the gas until some one of them fell over unconscious. It got so bad that I had a physician on duty down in the mine, a short distance from the affected area. The men would work in relays, 10 to 20 minutes in the affected area, then rest in fresh air for 20 minutes. When one would be overcome, he would be carried out to fresh air. There was no other treatment, except when some of them became violent and had to be restrained, sometimes by giving sedation, but usually fresh air was sufficient. They usually unloaded their stomachs.

#### SOLID ROCK BURNS

The statement: "Solid rock burns" sounds fantastic to the ordinary person, but such is the fact. There are several kinds of ore found in a copper mine, and one of them is a sulfide ore. This particular ore contains sulfur, and when great heat is used the sulfur gas goes off in fumes. This can be easily recognized as the white smoke billowing from the tall chimneys of a smelter. You may have wondered why the stacks are so high (200 to 300 feet), they are so

built that the sulfur fumes may be carried high in the air and more easily dissipated. The smoke is heavy and if close to the ground will destroy all vegetation. Many lawsuits have been filed against the smelting companies in the Sulphur Springs Valley on account of the damage the sulfur smoke has caused to the crops.

Underground, when ore is mined out, great empty spaces are left. The weight of the ground above at times causes a slip of rock and the friction of two rock surfaces of sulfide ore causes such intense heat that it sets fire to the sulfur in the ore and burns with a greenish yellow flame. This is no pipe dream, I have actually seen it underground. The fires sometimes burn for years.

#### PUNCTURE WOUNDS IN COPPER MINES IN BISBEE

During my 26 years of mine practice I never saw a case of tetanus originating in the mines. Thousands of puncture wounds were treated — thorough cleansing of the area, pure phenol applied to punctures, antiseptic dressings. The reason there was no tetanus — the ground in which they worked was virgin soil, never had been contaminated.

DRIVE-IN PRESCRIPTION WINDOW

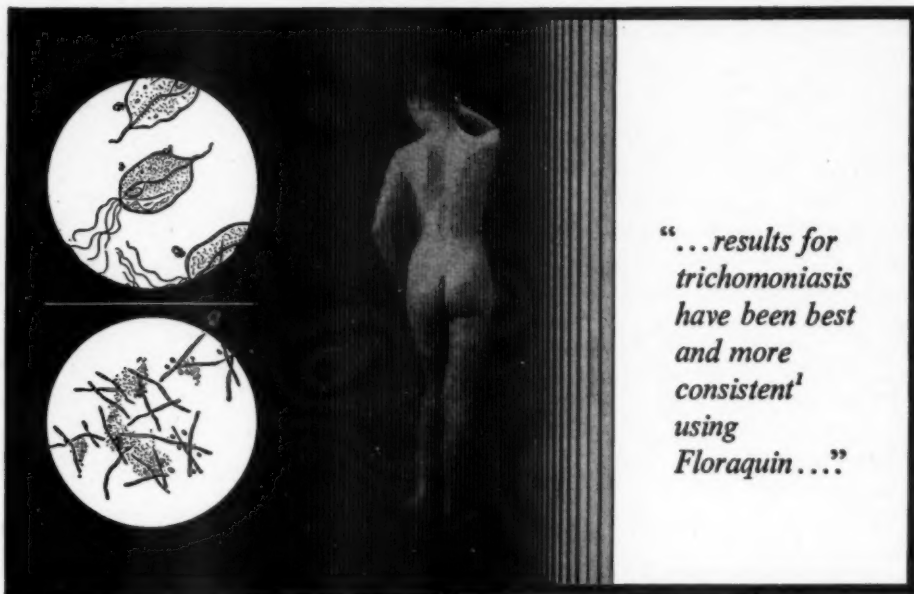
**PEOPLE'S DRUG STORE**

111 E. Dunlap

WE 3-9152 — WI 3-9964



EFFECTIVE, DEPENDABLE THERAPY FOR VAGINITIS

The illustration features a central, dark silhouette of a woman's back, facing away from the viewer. To the left of the silhouette are two circular insets. The top inset shows several trichomonads, which are pear-shaped organisms with flagella. The bottom inset shows monilia, which are branched, filamentous structures. To the right of the silhouette, there is a white rectangular area containing a quote in italics.

*"...results for trichomoniasis have been best and more consistent<sup>1</sup> using Floraquin..."*

## Floraquin<sup>®</sup> eliminates trichomonal and mycotic infection; restores normal vaginal acidity

Leukorrhea is by far the most frequent symptom of vaginitis; trichomonads and monilia are the most common causes. Many authors have reported<sup>2</sup> trichomonal protozoa in the vagina of 25 per cent of obstetric and gynecologic patients. Increased use of broad spectrum antibiotics has resulted in a sharp rise in the incidence of monilial infections.

Floraquin effectively eradicates both trichomonal and monilial vaginal infections through the action of its Diodoquin<sup>®</sup> content. Floraquin also furnishes boric acid and sugar to restore the normal vaginal acidity which inhibits patho-

gens and favors the growth of protective Döderlein bacilli.

Pitt<sup>1</sup> recommends vaginal insufflation of Floraquin powder daily for three to five days, followed by acid douches and the daily insertion of Floraquin vaginal tablets throughout one or two menstrual cycles. G. D. Searle & Co., Chicago 80, Illinois. Research in the Service of Medicine.

1. Pitt, M. B.: Leukorrhea. Causes and Management, J. M. A. Alabama 25:182 (Feb.) 1956.

2. Parker, R. T.; Jones, C. P., and Thomas, W. L.: Pruritus Vulvae, North Carolina M. J. 16:370 (Dec.) 1955.

SEARLE

## *Topics of Current Medical Interest*

### **JESSE HAMER, M.D.**

**V**ICE President of the American Medical Ass'n. JESSE HAMER, M.D., well-known Phoenix internist, was elected vice president of the American Medical Association at the recent annual meeting held in New York.

Jesse received the Doctor of Medicine degree from Western Reserve University in 1926. He settled in Phoenix in 1928 and since that time has been active in the affairs of the Maricopa County Medical Society and the Arizona Medical Association.

Locally he has served as staff member of Good Samaritan Hospital (secretary, 1930-34; chief of staff, 1936; chief of medical department, 1937 to date), St. Joseph's Hospital, J. C. Lincoln Hospital, Memorial Hospital, St. Luke's Hospital, and the Arizona State Tuberculosis Sanatorium. He is an active participating member of the Phoenix Clinical Club.

Since 1928 he has served the Maricopa County Medical Society as a member and at one time or another as member and chairman of various committees and as member of the board of directors.

He has been a member of the Arizona Medical Association since 1928; council member and delegate to the AMA since 1934. He was president in 1936, speaker of the house several terms, chairman of the legislative committee since 1931 (except 3 years), member of the publishing committee, medical defense committee (chairman 3 times), medicolegal committee (current chairman), insurance investigating committee (current chairman), professional liability insurance investigating committee, central office advisory committee, legal service committee, medical school committee, and osteopathy liaison committee.

Regionally, he is a member of the Southwestern Medical Association, serving several term on the board of governors; was first vice president in 1940, and a member of the editorial staff of Southwestern Medical Journal, 1934-41. He is now serving the United Public Health League of Western States as secretary-treasurer.

Nationally, he has been a member of the AMA since 1928; and has served as delegate from Ari-



**Jesse D. Hamer, M.D.**

zona to the house of delegates since 1934; was on the council on medical service (1947-53); and is on the advisory committee to the board of trustees of AMEF currently.

He is also a member of Alpha Omega Alpha, the American College of Physicians (life member), the American Heart Association, the Endocrine Society, and the Geriatric Society.

He belongs in addition to two international groups, the World Medical Association, and the Academy Internationale de Medicine.

Besides the numerous positions Jesse has held in medical organizations, he has been active in community projects. For more than 25 years he has served the Red Cross in various capacities, being chapter chairman in 1936. Likewise, for a quarter of a century, he has served the Boy Scouts, being on the board of directors since 1932. He has been a member of the Phoenix Rotary Club since 1930, is a founder-member of the Community Health Council, and a member of the survey committee on recreational needs and services of the Phoenix Community Council. He is a member and was active in the organization of the Arizona chapters of the American Cancer Society and the American Heart Association, and of the Arizona Blue Cross.

Jesse is a veteran of World War I, and has served during and since World War II as commander, medical corps reserve, United States Public Health Service.

In spite of these many activities, Jesse has found time to conduct a busy practice of medicine, is esteemed highly by his colleagues, and is beloved by his patients.

The members of the medical profession in Arizona are indeed proud of Jesse and are pleased with this honor he has received, and that he has brought to us.

Congratulations, Jesse. We know you have not stopped yet. On to the top!

## THE ARIZONA MEDICAL ASSOCIATION, INC.

### REPORT OF THE COMMITTEE ON REPORTS

*President*

*A. I. Podolsky, M.D.*

**T**HE past year has been marked by an opportunity to meet and work with a group of stalwart men dedicated to the finest ideals in medicine. I refer to the members of the council, committees and boards whose reports are now in your hands, and whose unselfish devotion and industry are reflected in the progress of The Arizona Medical Association. To all of you, I give my heart-felt thanks.

Medicare is now a reality. The socio-economic implications of this plan may be considered debatable. I personally consider it as embarking on an experiment where we, like little children, taste of the icing of a cake, the actual quality of which we do not know. It is another form of dabbling in socialism. I hope that the end result will not be a "bellyache."

The legislation committee is always alert in the detection of proposed bills that may be detrimental to the interests of improved health of the citizens of this state, and of the nation. It is always prepared to support legislation that is constructive and protective of good health measures. The benevolent and loan fund committee has under consideration a challenging project which merits our attention, and has prepared a scholarly report.

I take great pride in announcing to you that the association has again been awarded a certificate of merit by the American Medical Association

for our contributions to AMEF. I hope that we will continue to generously support this bulwark against governmental interference with the education and training of our young doctors.

We have added to the central office staff an assistant executive secretary, Mr. Paul R. Boykin. The association headquarters have been moved to a larger suite in the same building and share that space with the Board of Medical Examiners of the State of Arizona.

I thank you for your kindness in helping me during this past year by your devoted service on committees and boards, and by your wise counsel. I also thank you for having been able to serve as an officer of this association. It is my sincere hope that this meeting will be successful, and will bring to fruitful completion the plans and dreams of those who are tireless in their efforts to build an even greater Arizona Medical Association.

*Secretary*

*D. W. Melick, M.D.*

The secretary calls attention to the increased activity on the state level which necessitated the employment of additional personnel. This has been in the past due to the increased membership which now numbers 857, an addition of 57 since last year.

*Editor-In-Chief* *Darwin W. Neubauer, M.D.*

The editor-in-chief reports a reorganization of the editorial staff of the Journal which was carried out last year. A specific editorial board was organized to review material and establish policy. Associate editors have been appointed to review material in their various fields of specialization. He requests the desirability that associate editors in various sub-specialties submit a resume of the meetings. Reporters have been appointed for various districts of the state to obtain regional information for publication in the Journal. The content of the Journal has increased from 32 to 35 to an excess of 50 pages monthly.

*Historian*

*Howell Randolph, M.D.*

The historian through correspondence has promoted and stimulated the printing of the articles on medical history in Arizona Medicine. He invites the contribution of physicians interested in the history of medicine with regard to the impact on the lives of Arizona physicians.

*Councilors*

The report of councilors was made without any additional recommendations or comments except from Dr. Fred Knight who recommends

a comprehensive plan for administering of and charging for the poliomyelitis vaccine, and that it be a principal function of the state convention.

### COMMITTEES

#### *Medical Education Committee*

*D. W. Melick, M.D., Chairman*

A complete report of medical manpower requirements in the West will be published in Arizona Medicine. This committee has no recommendations to make until this report is completed.

#### *Delegates to AMA Jesse D. Hamer, M.D.*

All sessions of the House of Delegates of the American Medical Association were attended by both Doctor Hamer and our executive secretary, Mr. Carpenter. These reports have been published in Arizona Medicine.

#### *Arizona Committee of the American*

#### *Medical Education Foundation*

*H. W. Kohl, M.D., Chairman*

The chairman, Doctor Kohl, attended the sixth annual meeting in Chicago in 1957.

He states during the past year there has been a separation of AMEF and the National Fund for Medical Education. This is considered to be an excellent move, since the Ford Foundation grants go to medical education through the national fund. In 1956 AMA gave AMEF an additional \$100,000 as a substitute for the Ford Foundation grant. Also in his report is a breakdown of monies given to medical schools in 1956 by the national fund. The total amount of national fund grants distributed in 1956 was \$3,067,100.

Among the list of state medical associations, Arizona is to be commended. In 1955, 729 dues-paying members contributed \$4,025 and in 1956, 739 members donated \$4,893.87. Of the 1956 amount, \$3,695 was a treasury grant authorized by council, \$84 by the state women's auxiliary, \$117 Maricopa County Woman's Auxiliary, \$295 Pima County Woman's Auxiliary, \$90 Yavapai County Woman's Auxiliary, \$79.87 Yuma County Woman's Auxiliary, and \$533 by individual physicians.

Doctor Kohl, as chairman, requests that the amount of \$100 be budgeted to his committee so that he may conduct a mailing program during 1957.

#### *Professional Liability Insurance*

#### *Investigating Committee*

*Howard C. Lawrence, M.D., Chairman*

This committee has been negotiating with the Nettleship Company of Los Angeles regarding possible underwriting and servicing of a group professional liability insurance program for the members of the association. The final proposal is not yet ready for submission.

#### *Medical Economics Committee*

*Stuart Sanger, M.D., Chairman*

The medical economics committee reviewed a new supplemental disability insurance program at the state level and reviewed the recommendations of the industrial relations committee as to revision of the industrial commission fees.

#### *Central Office Advisory Committee*

*W. R. Manning, M.D., Chairman*

This committee reports that because of the ever-increasing volume of work in the central office of the association, which includes the administrative offices of the Board of Medical Examiners of the State of Arizona, the central office advisory committee was established. At the first regular meeting this problem was studied and it was recommended to the council that a male assistant to the executive secretary was needed. This position was filled by Mr. Boykin on a trial basis beginning Oct. 16, 1956. They recommend that theirs be a continuing committee.

#### *Professional Liaison Committee*

*W. B. Steen, M.D., Chairman*

This committee has had several meetings with other professional groups. These are: Arizona pharmaceutical group, the Arizona Bar Association and the Arizona Dental Association. They reviewed the matter of selection of doctors or pharmacists as a free choice to the patient or customer. They have discussed obesity control treatments and have called attention to the responsibility for telephoned narcotic prescriptions. They recommend that additional cooperation among these groups is necessary. They are exploring the possibility of a joint professional building.

#### *Veterans' Medical Affairs*

#### *Liaison Committee*

*H. D. Ketcherside, M.D., Chairman*

This committee was inactive during the year because of lack of any problems arising which would justify calling the committee together.

#### *Joint Committee On Improvement*

#### *Of Nursing Services*

*Francis J. Bean, M.D., Chairman*



This committee has held two meetings during the previous year. They call attention to the fact that the American League of Nursing has established a chapter in the state. A collegiate program of nursing at the University of Arizona is definite and will start this fall. There will be a practical nursing school open in September in Tucson.

#### *Medico-Legal Committee*

*Jesse D. Hamer, M.D., Chairman*

This committee reports that no meeting with a similar group of the State Bar Association was held. The committee is hopeful of having a future meeting. The law department of the American Medical Association will sponsor regional meetings for discussion of medico-legal matters. Arizona was represented by the chairman, Doctor Hamer, at the regional meeting held in Denver, Colo., this year.

#### *Insurance Investigating Committee*

*Jesse D. Hamer, M.D., Chairman*

The committee has been inactive during the past year because of the lack of subject matter which would necessitate calling a meeting. However, the chairman recommends that this committee be continued.

#### *Air Pollution Committee*

*George G. McKhann, M.D., Chairman*

This committee reports that air pollution study continues in co-operation with the Maricopa County Board of Supervisors. There will be additions made to this joint commission.

#### *Grievance Committee*

*Harry E. Thompson, M.D., Chairman*

The chairman indicates that grievances have been less in number the past year, probably due to better doctor-patient relationship. He recommends that council consider the problems of complaints from insurance carriers and asks that council advise whether this is within the scope of the grievance committee. He stresses that all grievances, if possible, should be settled at a local level. The constitution and by-laws committee should be instructed to define through council a clarification of their activities.

#### *Joint Commission of Arizona Blue Shield*

*H. D. Ketcherside, M.D., Chairman*

This report was submitted to this house of delegates when we met as delegates of the Blue Shield Corporation. The committee felt that no further report was necessary.

#### *Safety Committee*

*MacDonald Wood, M.D., Chairman*

This committee submits recommendations for its enlargement and improvement. Our committee feels that these recommendations should be forwarded to council for their study and consideration.

#### *Medicare Committee*

*Frank W. Edel, M.D., Chairman*

A detailed account of the evaluation and development of the Medicare program has been printed in the January 1957 issue of Arizona Medicine. The chairman in his report thanks council and all his co-workers for their cheerful and helpful co-operation.

#### *Industrial Relations Committee*

*Lindsay E. Beaton, M.D., Chairman*

This committee described in detail the procedure utilized in the examination of patients for the industrial commission to provide an objective, unbiased opinion when disputes have arisen in the management or disposition of these cases. A procedure has been worked out whereby x-ray films may be handled more expeditiously. This committee has drawn up and distributed suggested rules governing consultations on industrial commission clients. They have also proceeded with an upward revision of the industrial commission fee schedule, and negotiations are now under way with the commissioners of the Industrial Commission of Arizona.

#### *Publishing Committee*

*Darwin W. Neubauer, M.D., Chairman*

Our committee, and that is the committee of which I am chairman, commends the editor and his committee and acknowledges the fact that Arizona Medicine received the second place commendation of the newspaper editors of the state for the excellency of its publication.

#### *Constitution and By-Laws Committee*

*W. R. Manning, M.D., Chairman*

This committee reports two resolutions which will be presented before the house. The committee reports that a majority of the component societies do not conform to the constitution and by-laws of the Arizona Medical Association. These require that they have on file an up-to-date constitution for their own society. This committee has made certain recommendations in regard to local component societies. They also suggest revision of our Arizona state constitution and by-laws. Your committee on reports recommends that this be referred to council for their action. Now that might be something else

for you men to take back to your county societies, not only Doctor Yount's treasurer's report, but the message that in many cases no existing constitution or by-laws is held by your component society.

*Legislation Committee*

*Jesse D. Hamer, M.D., Chairman*

I would like to quote only the first paragraph of this rather lengthy and excellent report of Doctor Hamer and I quote: "The 23rd Legislature of the State of Arizona, First Regular Session, is entitled to the plaudits of the people in that they achieved a notable record of adjournment within the 60 days allotted. It is the first time in many years that this objective has been achieved. It is further recognized, taking everything into consideration, that this legislature should be commended for its accomplishments. The session was not without problems concerning the medical profession, and your legislation committee, legal counsel and staff devoted considerable time to the review of a multiplicity of measures introduced, and took action supporting those approved by council and exerted every effort in the defeat of those which were not in the best interests of the health and welfare of the people."

This committee, that is, our committee of which I am chairman, has reviewed the excellent work on bills as they were submitted by the legislation committee. We commend this committee on the excellency of their work and it is our hope that this report, including federal legislation, may be published fully in Arizona Medicine.

*President-Elect of the Woman's Auxiliary of the Arizona Medical Association, Inc.*

*Mrs. Charles S. Powell*

Mrs. Charles Powell reported the continuing work of the auxiliary in its many projects. She requested the budgeting of at least \$1,000 from the Arizona Medical Association so that work in student nurse recruitment, civil defense and mental health can be successfully carried out. Your committee, that is, my committee, recommends to the delegates the approval of their request for \$1,000.

*Benevolent and Loan Fund Committee*

*E. A. Born, M.D., Chairman*

Doctor Born reports that his committee has been instructed to establish a loan fund. Consideration was given to the allocation of funds for direct grants to members of the association

in distress, changes of the by-laws and consideration of a scholarship for the University of Arizona was also indicated. The committee recommended that the Arizona Medical Association, through the council, award from the general fund \$500 per year for a scholarship to the University of Arizona to be for the benefit of a third or fourth year pre-medical student needing financial assistance to continue his or their course of study. The award is to be based on (1) the financial need of the applicant, (2) his scholastic standing, which is to be satisfactory but not necessarily outstanding, and (3) his desire and intention to continue studies leading to an M.D. degree. Any portion of this award which is not used is to be added to the award of the following year or years. This committee, the committee on reports, recommends that this be submitted to council for further study.

*Arizona Advisory Committee to the Selective Service System*

*Joseph Madison Greer, M.D., Chairman*

This committee has continued its operation during the year 1956 reviewing circumstances surrounding the call for induction by the selective service system affecting the medical, dental, veterinary and nursing professions. The committee felt that with the introduction of the Medicare program, the doctor draft law would not be continued after its expiration July 1 of this year.

*Osteopathic Liason Committee*

*Reed D. Shupe, M.D., Chairman*

This committee calls attention to the fact that through a rather insidious form of legislative effort, the osteopathic physicians are attempting not only to lower the educational requirements for the practice of osteopathy, but at the same time remove certain requirements of the law which require that they must identify themselves as osteopathic physicians and surgeons apparently in an attempt to identify themselves on the principle encountered in the promotion and development of a community hospital in Glendale, Arizona. As yet no satisfactory solution has been reached, but negotiations are continuing so that it will be possible for that community to enjoy the advantages of a medical facility. It seems to the report committee that this report, and it contains recommendations regarding consultations, should be referred to council for its consideration ultimately.

*Co-Ordinating Committee on School Health*

*Elizabeth H. Laidlaw, M.D., Chairman*

This committee is continuing its work on a plan for certification of school nurses and the incorporation in the Arizona elementary and high schools of a health program.

*Medical Defense Committee*

*E. A. Born, M.D., Chairman*

There have been no requests from members of this association for opinion and advice. Mr. Blaine Shimmel, attorney, has requested no assistance from this committee since February 1956.

**BOARDS**

*Public Relations Board*

*James T. O'Neil, M.D., Chairman*

The public relations board held a meeting on Oct. 7, 1956. At this meeting the board approved a contribution of \$50 each to the Central Arizona Science Fair and to the Southern Arizona Science Fair.

The board highly recommended to council that an effort be made to have a committee represent all doctors in negotiations between labor and management, in which medical benefits were to be included among the fringe benefits.

The board approved participation in the Arizona State Fair and, with the co-operation of the armed forces, was able to set up a booth with other agencies interested in health measures at the fair.

The utilization of the rural health articles sent out by the AMA headquarters was decided upon, and the board has arranged to have these articles published in the Arizona Ranch Farmer. Mr. Rich Johnson, editor, has been very co-operative in handling these procedures with the public relations board.

The program of information pamphlets available to the physicians was continued.

*Professional Board*

*Ronald S. Haines, M.D., Chairman*

The committee on reports has reviewed the very brief report of the professional board. In the past, this board has been one of our most active boards and it is the feeling of the report committee that the professional board has a more complete and comprehensive program than appears in their report which reads as follows: "A formal meeting was held on Sunday, Feb. 24, 1957. Several of the sub-committee chairmen have reported on their activities, and the few activities on the Crippled Children's Service have already been reported."

**RESOLUTIONS**

**INTRODUCED AND PASSED  
1957 ARIZONA MEDICAL ASSOCIATION  
CONVENTION**

WHEREAS, it appears that historically the association has been in error in using in its corporate seal the staff of Mercury instead of the proper caduceus symbolic of medicine, the staff of Aesculapius, and

WHEREAS, the association is desirous of correcting this grievous error; now, therefore, be it

RESOLVED that The Arizona Medical Association, Inc., hereby revoke its former corporate seal improperly using the caduceus of Mercury, and hereby adopts the new corporate seal, the imprint of which is hereto affixed, using the caduceus symbolic of medicine depicting the staff of Aesculapius.

**THE ESTABLISHMENT OF AN ARIZONA  
POISONING CONTROL PROGRAM**

WHEREAS record of vital statistics of the United States indicate that the officially recorded incidence of annual illness from ingestion of poisons has remained consistently high above the 800,000 mark and annual mortality above the 2,000 mark during the past decade while marked progress is recorded in incidence and mortality for major diseases affecting man, and

WHEREAS there is definite need for a statewide program for gathering specific data concerning poisons and for disseminating information to aid in prevention and expedite treatment of poisoning in Arizona; now therefore be it

RESOLVED that The Arizona Medical Association approve the development of a statewide poisoning control program to include a proposed Poisoning Control Information Center in the University of Arizona College of Pharmacy as well as a number of emergency poisoning control units at major hospitals in the state; and be it further

RESOLVED that the physicians of Arizona co-operate fully in submitting reports on poisoning cases, through the use of prepared forms, to the end that periodic bulletins may be issued which will be informative to the physicians of the state and will promote a public education program for the prevention of poisoning; and be it further

RESOLVED that the need for legislation be



determined and action taken by the committee on legislation toward providing a legal requirement for the registration of toxic constituents and antidotes for all poisonous commercial products marketed in Arizona; and be it further

RESOLVED that we recommend to the state medical council that it give consideration to the appointment of an ad hoc committee to be known as the committee on poisoning control to implement the intent of this resolution; to act as a liaison committee with the University of Arizona College of Pharmacy, the State Pharmaceutical Association, and other interested bodies; and be it further

RESOLVED that this information be distributed to the secretaries of the individual county medical societies and given direct to each doctor, as members of this association.

W. B. STEEN, M.D., COUNCILOR,  
SOUTHERN DISTRICT

#### MEDICAL SERVICES STANDARDS AND NEGOTIATIONS

WHEREAS modern hiring practices of many companies and corporations include the supplying of medical services as a fringe benefit; and

WHEREAS most negotiations between unions and employers include medical services as a topic of discussion; and

WHEREAS the doctors of medicine, whose services are being so bargained for, often find themselves subjected to plans which are contrary to medical ethics; and

WHEREAS there are no representatives for the doctors of medicine at such negotiations in which medical benefits are discussed; now therefore be it

RESOLVED that the Council of The Arizona Medical Association appoint a subcommittee working under the medical economics committee to study the various plans now in effect, to evolve suitable standards for such plans, and to suggest methods whereby there may be medical representation at all negotiations in which medical services are discussed, and

RESOLVED that this committee notify all companies operating in this state as well as all unions that such a committee has been established and requesting opportunity to discuss with any of them the standards which the com-

mittee has developed, and be it further

RESOLVED that all such standards developed by this subcommittee shall be approved through the committee on medical economics and the state medical council.

J. BRUCE TUCKER, M.D., DELEGATE  
PINAL COUNTY MEDICAL SOCIETY

#### SENATE BILL 434, 85TH CONGRESS

WHEREAS, One of the cornerstones of the bipartisan Hoover commission, recommendations was improved financial management of the federal government, and

WHEREAS, We believe that the concepts embodied in Senate Bill 434 to insure maximum control and review of governmental expenditures by congress represent the greatest advance which this government can make in the field of improved budgeting, and

WHEREAS, Under present procedures there is no effective control over expenditures either by congress or in the executive branch; now therefore be it

RESOLVED That we, the members of the House of Delegates of The Arizona Medical Association, Inc., assembled April 11, 1957, in Yuma, Arizona, endorse and recommend passage of SB-434 which would provide that the executive budget and congressional appropriations be in terms of estimated annual accrued expenditures, namely charges for the cost of goods and services estimated to be received, and be it further

RESOLVED, That The Arizona Medical Association, Inc., and its members give support to all efforts to inform citizens concerning the findings of the commission and to induce greater citizen participation in governmental affairs, and be it further

RESOLVED, That copies of this resolution be forwarded to (a) national headquarters of the organization, (b) Senators Barry M. Goldwater and Carl Hayden representing the State of Arizona and Representatives Stewart L. Udall and John J. Rhodes, of the State of Arizona, and (c) the Citizens' Committee for the Hoover Report, 777 Fourteenth Street, N.W., Washington 5, D.C.

JESSE D. HAMER, M.D., CHAIRMAN,  
LEGISLATION COMMITTEE





## HOSPITAL BENEFIT ASSURANCE

HOME OFFICE: FIRST STREET AT WILLETTA • PHOENIX, ARIZONA • ALpine 8-4888

BRANCH OFFICE: 507 VALLEY NATIONAL BUILDING TUCSON, ARIZONA • 3-9421

MEDICAL DIRECTOR  
DUKE R. GASKINS, M. D.

Dear Doctor:

"Disclosure of Medical Record Information: A Re-Appraisal" is an interesting article in HOSPITALS, the official journal of the American Hospital Association. This article is written by James E. Ludlam and Theodore M. McCabe, Jr. The first part of this two-part article appeared in the July 16, 1957, issue.

While this article is written specifically for hospital administrators and record librarians, the article also brings out the position of the physician.

The introduction states, "Some hospital people do not give sufficient weight to the fact that insurance companies have a legitimate interest in most, if not all, of the information they seek. The carriers which do not check their claims will not long remain solvent. Further, the insurance company must also develop statistical information as a basis for rate making."

It is good to see that hospital administrators and physicians are realizing a responsibility to the insurance companies that pay a good part of their fees.

I can assure you that we at HBA never request information unless it is necessary to make a proper and just decision. Of course, a properly signed authorization is always enclosed with our request for information.

Very truly yours,

HOSPITAL BENEFIT ASSURANCE

Duke R. Gaskins, M. D.

Medical Director

DRG:sk

## DR. DAVID B. ALLMAN 111TH AMA PRESIDENT

**I**N taking the oath of office as 111th president of the American Medical Association June 4 in New York, Dr. David Bacharach Allman dedicated himself to the task of preserving the best in the personality of medicine and in the personality of America. The 65-year-old Atlantic City surgeon emphasized the fact that physicians today minister "not only to the human body and its ills, but also to human hearts, minds and emotions."

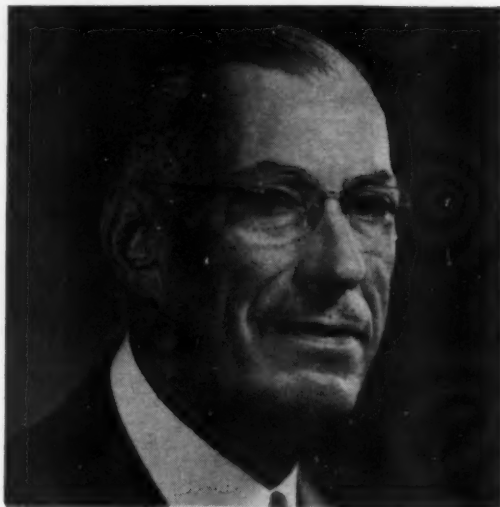
The dedicated doctor, Dr. Allman said, "knows that sympathy and understanding are just as important as scientific knowledge" and that the doctor knew this "in his heart even before he went to medical school." Along with concern over human, personal values, Dr. Allman said that "the physician is primarily a man of science — educated and trained to think, observe, investigate, evaluate and make careful judgments." He further pointed out the physician's obligations as an American citizen "to contribute his share of actions and opinions, especially on issues involving health and medical care."

Dr. Allman has been a prominent figure in the activities of the American Medical Association for many years. In 1951, he was elected to the AMA board of trustees. In addition, he served as a member and chairman of the AMA committee on legislation.

Dr. Allman was born in Philadelphia July 11, 1891, and shortly thereafter his parents moved to Atlantic City. They lived with his grandparents in the Bacharach family home which later became Dr. Allman's home and office. The Bacharach family, including Dr. Allman's mother, founded the Betty Bacharach Home for Afflicted Children, which today has an annual operating budget of nearly \$1 million, based entirely on voluntary contributions. Dr. Allman now devotes much of his time to the home which has grown into one of the most widely known and respected institutions along the Atlantic coast.

Dr. Allman formally announced his retirement from medical practice in 1950. His 35 years of practice included 30 years as surgical director and chief surgeon of Atlantic City Hospital.

He was graduated from Jefferson Medical Col-



Dr. David B. Allman

lege in 1914 and interned at Atlantic City Hospital in 1914-15. There he met nurse Katherine Bothwell whom he married in 1922. Mrs. Allman has long been active in the woman's auxiliary to the AMA, serving as president in 1949-50. When Dr. Allman was named president-elect of the AMA at the Chicago meeting in 1956, it marked the first time that a husband and wife were ever elected to the two top offices.

### REPORT OF ACTIONS OF THE HOUSE OF DELEGATES AMERICAN MEDICAL ASS'N. 106th Annual Meeting June 3-7, 1957 New York City

**T**HIS summary report of actions of the House of Delegates of the American Medical Association during its 106th annual meeting held in New York City, June 3 through 7, 1957, is submitted to give the membership of our association immediate reference to a few of the more important subjects dealt with during the sessions. As usual, a more detailed report on all actions taken will appear in subsequent issues of the Journal of the American Medical Association.

Revision of the Principles of Medical Ethics, relations with the United Mine Workers of America Welfare and Retirement Fund, the federal government's Medicare program, new

standards for medical schools, a new statement on occupational health programs and the issue of social security benefits for physicians were among the wide variety of subjects acted upon. **NEW PRINCIPLES OF MEDICAL ETHICS**

The house approved the long-discussed revision of the Principles of Medical Ethics, originally submitted at the 1956 annual meeting in Chicago. The final version, presented by the council on constitution and by-laws and then amended by reference committee and house discussions in New York, now reads as follows:

#### "PREAMBLE

"These principles are intended to aid physicians individually and collectively in maintaining a high level of ethical conduct. They are not laws, but standards by which a physician may determine the propriety of his conduct in his relationship with patients, with colleagues, with members of allied professions, and with the public.

"Section 1. The principal objective of the medical profession is to render service to humanity with full respect for the dignity of man. Physicians should merit the confidence of patients entrusted to their care, rendering to each a full measure of service and devotion.

"Section 2. Physicians should strive continually to improve medical knowledge and skill, and should make available to their patients and colleagues the benefits of their professional attainments.

"Section 3. A physician should practice a method of healing founded on a scientific basis; and he should not voluntarily associate professionally with anyone who violates this principle.

"Section 4. The medical profession should safeguard the public and itself against physicians deficient in moral character or professional competence. Physicians should observe all laws, uphold the dignity and honor of the profession and accept its self-imposed disciplines. They should expose, without hesitation, illegal or unethical conduct of fellow members of the profession.

"Section 5. A physician may choose whom he will serve. In an emergency, however, he should render service to the best of his ability. Having undertaken the care of a patient, he may not neglect him; and unless he has been discharged he may discontinue his services only after giving adequate notice. He should not solicit patients.

"Section 6. A physician should not dispose of his services under terms or conditions which tend to interfere with or impair the free and complete exercise of his medical judgment and skill, or tend to cause a deterioration of the quality of medical care.

"Section 7. In the practice of medicine a physician should limit the source of his professional income to medical services actually rendered by him, or under his supervision, to his patients. His fee should be commensurate with the services rendered and the patient's ability to pay. He should neither pay nor receive a commission for referral of patients. Drugs, remedies or appliances may be dispensed or supplied by the physician provided it is in the best interests of the patient.

"Section 8. A physician should seek consultation upon request; in doubtful or difficult cases; or whenever it appears that the quality of medical service may be enhanced thereby.

"Section 9. A physician may not reveal the confidence entrusted to him in the course of medical attendance, or the deficiencies he may observe in the character of patients, unless he is required to do so by law or unless it becomes necessary in order to protect the welfare of the individual or of the community.

"Section 10. The honored ideals of the medical profession imply that the responsibilities of the physician extend not only to the individual, but also to society where these responsibilities deserve his interest and participation in activities which have the purpose of improving both the health and the well-being of the individual and the community."

In approving the new Principles of Medical Ethics, the house of delegates also reaffirmed the "Guides for Conduct for Physicians in Relationships with Institutions," adopted in 1951, and requested the board of trustees to devise and initiate a campaign to educate both physicians and the general public to the dangers inherent in the illegal corporate practice of medicine in its various forms.

#### GUIDES FOR RELATIONS WITH UMWA FUND

In a key action on the basic issue of third-party intervention, as it affects the patient's free choice of physician and the physician's method of remuneration, the house adopted the "Suggested Guides to Relationships Between State

and County Medical Societies and the United Mine Workers of America Welfare and Retirement Fund," which were submitted by the AMA Committee on Medical Care for Industrial Workers. In approving the guides, the house also recommended that the board of trustees study the feasibility and possibility of setting up similar guides for relations with other third-party groups such as management and labor union plans.

The statement, which outlines both medical society and UMWA responsibilities, contains these "general guides:"

"1. All persons, including the beneficiaries of a third-party medical program such as the UMWA Fund, should have available to them good medical care and should be free to select their own physicians from among those willing and able to render such service.

"2. Free choice of physician and hospital by the patient should be preserved:

"(a) Every physician duly licensed by the state to practice medicine and surgery should be assumed at the outset to be competent in the field in which he claims to be, unless considered otherwise by his peers.

"(b) A physician should accept only such terms or conditions for dispensing his services as will insure his free and complete exercise of independent medical judgment and skill, insure the quality of medical care, and avoid the exploitation of his services for financial profit.

"(c) The medical profession does not concede to a third party such as the UMWA Welfare and Retirement Fund in a medical care program the prerogative of passing judgment on the treatment rendered by physicians, including the necessity of hospitalization, length of stay, and the like.

"3. A fee-for-service method of payment for physicians should be maintained except under unusual circumstances. These unusual circumstances shall be determined to exist only after a conference of the liaison committee and representatives of the fund.

"4. The qualifications of physicians to be on the hospital staff and membership on the hospital staffs is to be determined solely by local hospital staffs and by local governing boards of hospitals."

### THE MEDICARE PROGRAM

The house considered three resolutions dealing with the federal government's Medicare program for the dependents of servicemen. The delegates adopted one resolution condemning any payments under the Medicare program "to or on behalf of any resident, fellow, intern or other house officer in similar status who is participating in a training program." Government sanction of such payments, the house declared, would give impetus to the improper corporate practice of medicine by hospitals or other non-medical bodies. Such proposals, the house added, would violate traditional patterns of American medical practices, seriously aggravate problems of hospital-physician relationships, encourage charges by hospitals for residents' services to patients not under the Medicare program, and create a variety of additional problems in such areas as medical licensure and health insurance.

In another action on Medicare, the house recommended that the decision on type of contract and whether or not a fee schedule is included in future contract negotiations should be left to individual state determination. In this connection, however, the house restated the AMA contention that: the Dependent Medical Care Act as enacted by congress does not require fixed fee schedules; the establishment of such schedules would be more expensive than permitting physicians to charge their normal fees, and fixed fee schedules would ultimately disrupt the economics of medical practice.

The house also suggested that the AMA attempt to have existing Medicare regulations amended to incorporate the association's policy that the practice of anesthesiology, pathology, radiology and physical medicine constitute the practice of medicine, and that fees for services by physicians in these specialties should be paid to the physician rendering the services.

### NEW STATEMENT ON MEDICAL SCHOOLS

To replace the "Essentials of an Acceptable Medical School," initially approved by the house of delegates in 1910 and most recently revised in 1951, the house adopted a new statement entitled: "Functions and Structures of a Modern Medical School." Presentation of the document followed a year of careful study by the council on medical education and hospitals in collaboration with the Association of Amer-



ican Medical Colleges.

The statement is intended to provide flexible guides which will "assist in attaining medical education of ever higher standards" and "serve as general but not specific criteria in the medical school accreditation program." The document encourages soundly conceived experimentation in medical education, and it discourages excessive concern with standardization.

"No rigid curriculum can be prescribed for accomplishing the objectives of medical education," it states. "On the contrary, it is the responsibility of the faculty of each school continually to re-evaluate its curriculum and to provide in accordance with its own particular setting and in recognition of advances in science a sound and well-integrated educational program."

#### OCCUPATIONAL HEALTH PROGRAMS

The house also approved a new statement on the "Scope, Objectives and Functions of Occupational Health Programs," submitted through the board of trustees by the council on industrial health. The board report to the house said: "The statement describes and defines orthodox in-plant medical programs as understood in this country today and distinguishes clearly between such programs and the various plans for comprehensive medical care of the sick. It should help to resolve misunderstandings concerning the specialty of occupational medicine."

In adopting the statement, the house agreed with a reference committee report which declared that "the house has before it a statement which for the first time clearly defines the scope, objectives and functions of occupational health programs. It marks the needs and boundaries of occupational medicine. It states in a positive fashion the proper place of occupational health programs in the practice of medicine and it clearly charts the pathways of communication between physicians in occupational health programs and physicians in the private practice of medicine."

#### SOCIAL SECURITY FOR DOCTORS

Two resolutions favoring compulsory inclusion of physicians in the federal social security system and another one calling for a nationwide referendum of AMA members on the issue were rejected by the house. The delegates reaffirmed their opposition to compulsory coverage of physicians under the Old Age and Sur-

vivors Insurance provisions of the Social Security Act. They also recommended a strongly stepped-up informational program of education which will reach every member of the association, explaining the reasons underlying the position of the house of delegates in this issue. The house at the same time reaffirmed its support of the Jenkins-Keogh bills.

#### MISCELLANEOUS ACTIONS

In considering 66 resolutions and many additional reports from the board of trustees, councils and committees, the house also:

Congratulated the board and the committee on poliomyelitis for their prompt action in stimulating national interest in the polio immunization program;

Recommended further study and a progressive program of action, probably including legislative changes, to solve the problem of narcotic addiction;

Urged a more careful screening of television and radio patent medicine advertisements;

Directed the board of trustees to investigate the indiscriminate use of stimulants such as amphetamine, particularly in relation to athletic programs;

Directed the speaker to appoint a committee of five house members to study the Heller report, a management survey of the association's organizational mechanisms;

Commended the law department for its special report on professional liability and urged state and county medical societies to establish claims prevention programs and to show the new film, "The Doctor Defendant;"

Opposed the establishment of any further veterans' facilities for the care of non-service-connected illnesses of veterans;

Condemned the compulsory assessment of medical men and staff members by hospitals in fund-raising campaigns;

Commended the television program, Dr. Hudson's Secret Journal, its producers and its star, Mr. John Howard, for an outstanding contribution to the public interest and welfare, and

Recommended payment of transportation expenses of section secretaries for AMA meetings which they are required to attend.

#### ELECTION OF OFFICERS

Dr. Gunnar Gundersen of La Crosse, Wis., member of the AMA Board of Trustees since 1948 and chairman for the past two years, was

unanimously chosen president-elect for the year ahead. Dr. Gundersen, who also was first chairman of the Joint Commission on Accreditation of Hospitals from 1951 to 1953, will become president of the American Medical Association at the June 1958, meeting in San Francisco. There he will succeed Dr. David B. Allman of Atlantic City, N. J., who became the 111th president at the Tuesday night inaugural ceremony in the Grand Ballroom of the Waldorf-Astoria Hotel.

In addition to Dr. Gundersen, the new president-elect, the following officers were selected by the house on Thursday:

Your own delegate to the AMA had the distinction of being nominated and unanimously chosen vice president; Dr. George F. Lull of Chicago, secretary; Dr. J. J. Moore of Chicago, treasurer; Dr. E. Vincent Askey of Los Angeles, speaker, and Dr. Louis Orr of Orlando, Fla., vice speaker.

Four new members were elected to the board of trustees: Dr. George Fister of Ogden, Utah, to succeed Dr. James R. Reuling; Dr. Cleon Nafe of Indianapolis, Ind., to succeed Dr. James R. McVay; Dr. James Z. Appel of Lancaster, Pa., to replace the late Dr. Thomas P. Murdock, and Dr. Raymond McKeown of Coos Bay, Ore., to replace Dr. Gundersen. Dr. Edwin S. Hamilton of Kankakee, Ill., was elected chairman of the board at its organizational meeting after the elections in the house.

Dr. Homer L. Pearson Jr. of Coral Gables, Fla., was renamed to the judicial council. Two new members were elected to the council on medical education and hospitals: Dr. Clark Wescoe of Lawrence, Kans., to succeed Dr. Weiskotten, and Dr. Warde B. Allan of Baltimore, Md., to succeed Dr. F. D. Murphy of Lawrence, Kans.

For the council on medical service, Dr. Robert L. Novy of Detroit, Mich., was reelected, and Dr. Hoyt Woolley of Idaho Falls, Idaho, was chosen to replace Dr. McKeown. Dr. Warren W. Furey of Chicago was re-elected to the council on constitution and by-laws.

The house of delegates voted the 1957 Distinguished Service Award of the American Medical Association to Dr. Tom Douglas Spies, head of the department of nutrition and metabolism at Northwestern University Medical School, Chicago, and director of the nutrition clinic at Hillman Hospital, Birmingham, Ala., for his out-

standing contributions to the science of human nutrition. For only the third time in AMA history, the house also voted a special citation to a layman for outstanding service in advancing the ideals of medicine and contributing to the public welfare. Recipient of this award was Henry Viscardi Jr. of West Hempstead, N. Y., founder and president of Abilities, Inc., which employs only severely disabled persons.

Physician registration at the New York meeting had already reached an all-time high at 5 p.m. Thursday with 18,982 counted and scores of registration cards still unprocessed. The previous high was chalked up at the 1953 New York meeting when the five-day total was 17,958 physicians.

Your President, Dr. Carlos Craig, your executive secretary, Mr. Robert Carpenter, and your delegate attended all of the meetings of the house. The delegate was assigned by the speaker to the reference committee on sections and section work.

Respectfully submitted,

JESSE D. HAMER, M.D.

Delegate to the AMA and Vice President  
Phoenix, Arizona

June 10, 1957

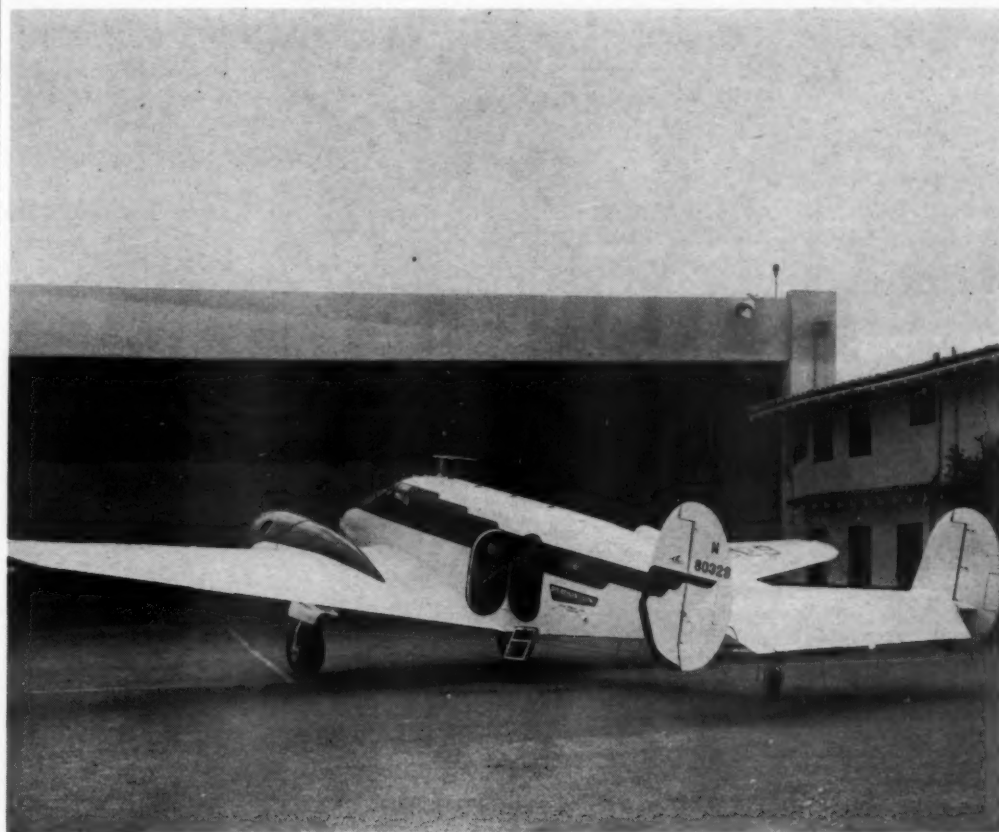
### A.M.A. MEMBERSHIP SHOWS INCREASE

AMA membership reached 164,128, highest in history, as of last April 30.

Robert Enlow, head of the AMA membership department, explained that the increase in the AMA service membership probably resulted from changes in the constitution and by-laws admitting members of the reserve components, rather than from any substantial increase in the number of physicians entering the government services and the armed forces.

A breakdown of the membership figures follows:

Kind of Member	AMA Membership		
	Apr. 1956	Dec. 1956	Apr. 1957
Dues Paying	132,341	134,307	136,381
Dues Exempt	11,200	10,554	9,817
(Tot. Active)	(143,541)	(144,861)	(146,198)
Associate	5,892	6,095	5,856
Service	8,649	9,660	11,713
Affiliate	269	279	273
Honorary	94	93	88
Total	158,445	160,988	164,128



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## ARIZONA POISON CONTROL CENTER

### NEW NOTES IN POISON CONTROL

**T**WO new reports on snake bite treatment appear to be timely. They deal with the physiological and the mechanical principles, respectively:

1. A University of Miami School of Medicine research team reports that the survival rate of experimental animals given rattlesnake venom systematically was raised from 17 per cent to 75 per cent, empirically, by injections of hydrocortisone. (*Dr. W. E. McDonald Jr., Coral Gables, Florida*).

2. A United States Navy medical research group, evaluating the usually recommended mechanical treatments of snake bite cases, used 84 rabbits injected with *Crotalus* venom (approx. 4 mg/kg body wt.) and treated in four ways: immobilization; immobilization and tourniquet; immobilization with incision and suction; and simple return to cage. Results indicate that rabbits live longest when immobilization with or without tourniquet is used. The use of incision and suction is contradicted. (*Military Medicine*, v. 120, no. 6, June '57).

The picnic outing season has increased greatly the use of "canned cold" preparations which are frozen in the refrigerator and packed in the lunch basket to aid in the preservation of foods. Solutions of the salts of tri-valent metals (such as aluminum chloride) are sometimes employed in these containers in concentrations which could cause some stomach upset in the event of spillage over absorbent type foodstuffs (bread, etc.) following puncture of the container and melting of the contents. One such product, Frigee Freeze, contains starch and other harmless ingredients preserved with .1 per cent formaldehyde and, although distasteful, would not likely be harmful.

### JULY 1, 1957 PROGRESS REPORT OF THE POISON CONTROL INFORMATION CENTER AT THE UNIVERSITY OF ARIZONA COLLEGE OF PHARMACY

**S**ERVICES at the Information Center began officially on July 1. However, poisoning case reports were received and the first phases of the "Westernization" of the Florida nucleus file were conducted throughout June.

Forty-three case reports have been received

from Arizona physicians and are summarized by the following statistics:

#### Age:

- 63% involve under 5 year age group
- 5% involve 6 to 15 year age group
- 15% involve 16 to 30 year age group
- 9% involve 31 to 45 year age group
- 8% involve over 45 year age group

#### Nature of incident:

- 91 per cent accidental and 9 per cent intentional

#### Outcome:

- 98 per cent recoveries and 2 per cent fatalities

#### Time of day:

- 25% occurred between 6 a.m. and noon
- 50% occurred between noon and 6 p.m.
- 25% occurred between 6 p.m. and midnight
- None occurred between midnight and 6 a.m.

#### Causative Agent:

- 16% by aspirin preparations
- 14% by sedative preparations
- 14% by solvents including kerosene, etc.
- 12% by dog bites
- 7% by insecticides
- 7% by household wax preparations
- 4% by tranquilizer drugs
- 26% by miscellaneous group including bleaches, narcotic medications, disinfectants, cathartics, cosmetics, scorpions and gila monsters.

In view of the high incidence of reports on aspirin, kerosene and sedatives, the following treatments for these poisonings are quoted from the Information Center files:

#### Aspirin:

1. Pending gastric lavage, delay gastric absorption by the use of an emetic or by swallowing milk or a slurry of the "universal antidote."
2. Gastric lavage with water or sodium bicarbonate solution (3 to 5 per cent).
3. Saline catharsis with sodium or magnesium sulfate.
4. Alkali therapy in the presence of an acidosis determined by blood sample.
5. Correct hypoglycemia and dehydration to support renal function.
6. Small doses of barbiturates or other sedative (not morphine) for restlessness and convulsions.
7. Hemodialysis by means of an artificial kidney.
8. Large doses of vitamin K for hemorrhage.
9. In last stages of CNS depression, stimulants such as caffeine and nikethamide may be beneficial.



### *Sedatives —*

1. Gastric lavage with potassium permanganate 1:5,000.
2. Saline cathartic, 15 to 30 grams, to be left in the stomach.
3. If stimuli such as pinching arouse the patient even briefly from the coma, and if respirations are full and regular, further treatment is seldom required.
4. Correct any airway obstruction.
5. Oxygen therapy is warranted at the slightest suspicion of hypoxia.
6. Analeptic drugs such as caffeine only if a clear and compelling need exists.
7. Correct dehydration by cautious administration of replacement fluids. Catheterize the urinary bladder to prevent retention.

### *Kerosene (solvents in general) —*

1. Emetics are contra-indicated. Cautious gastric lavage with copious amounts of water or a weak solution of sodium bicarbonate (3 per cent). After lavage, instil 30 to 60 ml. of mineral oil in the stomach as well as using saline cathartics.
2. If CNS depression is prominent, nikethamide or caffeine may be employed parenterally.
3. Parenteral antibiotic therapy as a prophylactic measure against bacterial invasion of the lungs.
4. Positive pressure oxygen therapy as supportive treatment for pulmonary edema.
5. Avoid epinephrine, digestible fats, oils, and alcohol.

## HEART STUDY CENTER

A HEART CENTER for special studies has been established at St. Luke's Hospital, Phoenix. This has been made possible by splendid co-operation between the board of directors of the hospital and the Greater Arizona Heart Association. This co-operation has been both organizational and financial. The center continues and enlarges on facilities that have been available at the hospital during the past two years. The facilities and service function around cardiac catheterization and angiocardiology, but wider applications are planned for the future. The center is not intended at this time to serve as a general consultation service in heart disease. Limitations in personnel and funds preclude such a service. Besides which, it is felt that there are adequate facilities in Maricopa County for the usual cardiac consultation which

requires apparatus that is available in the internist's office. For those unable to pay the usual consultation fee, there are clinics they may attend. In addition, it is well known that physicians in general will modify their office fee in cases of financial hardship.

At the present time, cardiac catheterization and angiocardiology are helpful and often essential in cases of congenital and rheumatic heart disease where the exact nature of the defect is not established clinically and/or a prediction as to whether the abnormality is surgically remediable cannot be made with reasonable precision. Important too is an assessment of the contributions to the circulatory disability of the mechanical defect as against myocardial dysfunction, although this is not always possible even with the most modern methods of investigation.

It is obvious that the suitability of a case for special study can only be determined by a physician specially versed in cardiology. To this end, and because the special studies in each individual case take a great deal of skilled technical and professional time (the latter, incidentally, is provided gratuitously), patients are accepted by the center only by referral from physicians known to be versed in the possibilities and limitations of the special studies. In general, this means referral by one oriented to cardiology. With only this limitation, cases are accepted for consideration by the physicians of the heart center who will further evaluate the likelihood that the special studies will contribute materially to the welfare of the individual patient. There is no geographic limitation.

While the heart center will not operate as a treatment center, the surgical facilities at St. Luke's Hospital have benefited from the generosity of the Arizona Heart Association with matching federal funds. These funds have been used to establish an adequate armamentarium for cardiac surgery. It is anticipated that within a reasonable period of time, in addition to the surgical procedures on the heart that already are being performed in the Valley by experienced and specially trained surgeons, all procedures beyond the purely experimental will be possible.

It will be apparent that the new facilities will not be useful to the majority of cardiac patients at the present time. However, they are essential if successful surgery is to be carried out in cer-

tain types of heart disease. Furthermore, it seems likely that since cardiac surgery is ever and rapidly increasing its scope, the day is fast approaching when wider use will be made of the apparatus. At that time, thanks to the generosity of all concerned, the limitation will not be apparatus and funds, but personnel, both technical and professional. A thoroughly experienced team both professional and technical, is the sine qua non of the new heart center, providing that funds continue to be made available for its operation and for the continued modernization of diagnostic and surgical apparatus.

The *modus operandi* of the heart center has been made as simple as possible. Application should be made direct to the secretary of the heart center at St. Luke's Hospital by the referring physician. A fee schedule has been set up which should be within the means of the average patient, but modifications will be made in cases of financial hardship. A preliminary work-up in the hospital is required unless one has been accomplished and is, in the opinion of the heart center team, adequate and complete.

### INDIGENCY AMONG DOCTORS

By Beverly C. Smith, M. D.

New York City

(President, Physicians' Home)

**A**DMINISTRATION of the Physicians' Home for the past 12 years has revealed existing financial conditions among doctors and their widows that neither doctors at large nor the laity realize exists. It seems appropriate that if help is to be obtained, the members of the Medical Society of the State of New York should be acquainted with some of the experiences of the board of directors of the Physicians' Home.

Organized and incorporated under the charity laws of the State of New York in 1919 to care for indigent doctors, their wives, widows, and dependent children, the Physicians' Home has functioned continuously and has grown in size, scope, and usefulness. Its affairs are administered by an executive committee, a board of directors of 27, and five trustees. It employs the Hanover Bank as its financial advisor and Price-Waterhouse as auditors. The board of directors meets monthly eight times during the year. The executive committee meets monthly and, when the board is in recess, has power to act for the board of directors. Income is de-

rived from annual membership dues of \$10 from members of the Medical Society of the State of New York, voluntary contributions of \$2 solicited from state society members when a bill for dues of the county societies is sent, contributions from women's auxiliaries, voluntary contributions from individuals, and bequests. It is our policy to use income from contributions to care for guests and administrative costs, while bequests are placed in an endowment fund income from which is also used in the care of guests. The expenses of administration include the cost of publicity and appeals, accounting, custody accounts, legal fees, social service, and part-time secretarial help. Heretofore the Home's office has been domiciled, rent (and light) free, in the office of either the secretary or the president, but requests for aid have so increased of late that the board of directors has now obtained space in the office of the state medical society and has acquired necessary executive help for its increasing administrative problems.

### REQUESTS GROW

Requests for financial assistance reached such proportions that the board of directors agreed that a letter be sent out in December 1954, asking each member of the state society to become a \$10 contributing annual member. A total of 23,200 such letters were sent out, and we received \$10,404 from 1,087 doctors, approximately 4.66 per cent of the number solicited. In December 1955, a similar letter was sent, and our response was \$14,358.50 from 1,528 members, or approximately 5.5 per cent of the total state society membership. A similar appeal was made in December 1956. If 50 per cent of the 23,200 members of the state society became contributing members, for a tax-deductible contribution of \$10, our income from this source of approximately \$120,000 would enable us to give more to more guests and perhaps help to care for them when they need nursing home or hospital care.

Since our incorporation in 1919 (38 years) we have had more than 93 guests. Of these, 30 were widows, three women doctors, and 60 were male doctors. Our guests have come from many of the 61 counties of the state. Applicants are usually in the older age group of 60 to 90. Naturally most are afflicted with partially incapacitating geriatric pathology. We simply have never had sufficient funds to accept the cost of nursing home and hospital care. When such

situations have arisen, we have been able to assume only a part of the cost, an amount equal to that which we sent the particular guest each month before his custodial care began. We are desirous of being more helpful in such cases and can do so only if we have increased revenue.

#### NO SOLICITATIONS

We have never solicited funds outside of the membership of the Medical Society of the State of New York. The board of directors has opposed the policy of public solicitation. From time to time we have received bequests (from individuals) which we have placed in an endowment fund administered by the trustees with the financial advice of the Hanover Bank. The income from this fund is used to supplement our other income which is used for the care of guests. To handle the many legal problems which would naturally arise in the affairs of such an organization, we regularly employ a legal counsel who has given generously of his time and efforts for a nominal monthly fee. I must say that we could not function without the most generous and helpful advice we have received from our counsel, Mr. J. Miller Walker, a relative of one of the founder group. To my present knowledge, similar organizations function only in Massachusetts and Pennsylvania, and their budgets are considerably smaller than ours in New York State. We have increased our appropriations for these purposes in each succeeding year. During our fiscal year, Oct. 1, 1954, to Sept. 30, 1955, we gave to 34 guests \$39,295.

It was recently brought out in testimony before a congressional subcommittee of the senate committee on labor that 12.5 million workers were covered by private pension systems 28,762,000 workers were covered by group life insurance plans, and there were 68,241,000 workers or dependents under hospitalization plans at the end of 1954. At the same time, there were 800,000 retired workers drawing benefits from private firms, and with their wives this total was 1.2 million persons (U. S. News & World Report, April 27, 1956, page 132).

#### TIMES CHANGE

The practice of medicine has changed along with the changing times. The cost of a medical education has increased. Periods of internships, residencies, and qualifications for specialty board certification have likewise lengthened. Many medical students have had part or the

whole of their educational expenses defrayed by the military services and on graduation or shortly thereafter have entered the services where they received compensation. This amount of compensation at the time — their first earned money — seems large, so much so that many have had a sense of financial security that has led them, earlier than usual after graduation, into matrimonial responsibilities. The natural sequences of a family and eventual separation from the services are followed by a search for residency and specialty training. Remuneration on a small scale is then received for two or more years. During this time, financial responsibilities with a growing family have increased. Having attained the training sought, usually at the approximate age of 30 to 35, the young doctor proceeds to look for a place to practice. Many enter clinic groups on a salary basis, but those who establish independent practices must finance a home, an office, and transportation facilities and must maintain a social environment in keeping with their dignity and probable advancement. Frequently, savings have been inadequate for these purposes, which necessitates borrowing. If serious illness in his family, i.e., his wife or children, parents, or dependent family collaterals, has occurred, savings will have been depleted, or additional borrowing will have been necessary. This may seem a somewhat dismal story, but it is often a true one, and it is to their eternal credit that young doctors so often face these situations with extraordinary courage and fortitude. However, how soon can one under somewhat similar circumstances begin to save to meet further responsibilities and prepare for the future, be it what it may? The time to save is early. Insurance is cheaper, and in youth more chances can be taken, for the long future holds more opportunities to right bad judgment or unforeseeable misfortunes.

#### MERRY-GO-ROUND

The doctor in many instances lives beyond his means. It seems that this is thought to be a necessary chance to enhance his social status which will return to him subsequent financial gain which seems worth the chance. A professional man's income is exaggerated by the laity. His expenses are overlooked. His financial security in old age is not considered important enough to discuss. He is expected to contribute to all charities and keep socially and physically fit. Once his earning capacity is established, he



is besieged by taxes. No matter how necessary they are, they are often financially crippling and will always be with him. As a doctor advances into his most productive years, for a period of 10 to 15 years his expenses, taxes, and family responsibilities increase. Unless he has intelligently approached the problem of systematic, regular saving and has established this principal as a jealously guarded habit, he may well be starting on a path of eventual financial insecurity, a sad road from which there is seldom self-rescue. Inability to live on an accustomed financial level invites isolation with deterioration of interests. It is very surprising how savings disappear when one has not anticipated meeting unusual financial responsibilities. The doctor is notoriously easy to approach by those who have something to sell. A quick and unusual return in the investment field is an enticing object when dangled before a hard-working, self-sacrificing medical person. A policy of gradual saving and a sound investment at a lower return with an avowed purpose to allow accumulation is slower and often is a policy of personal deprivation which is not attractive unless one is dedicated to it — and one which the busy doctor has not and will not take time to comprehend.

When the ages of 40 and 50 are reached parental or collateral family responsibilities may suddenly loom large and financially devastating.

#### CLOUDED FUTURE

Preoccupation with professional advancement is a consuming element in a doctor's life; vital as it is, it may well cloud the vision necessary to foresee and establish the future. Then comes the period of release from professional appointments, decreased professional activity, and a less avid interest in advancement — a sort of dulling of the instinct of competition — the invasion by competing younger doctors, the plateau from which the vista of life is less glamorous, and on looking backward things which might have been seem more poignant. The procession, if one survives sufficiently long, leads into further decreased activity and geriatric pathology. The cost of medical care today is stupendous, and there are no obvious signs that it will decrease.

Time and again these and similar situations of varying degrees have crossed the desks of those who have processed applications for beneficiary aid from the Physicians' Home. Tragedy — stark tragedy — tragedy of despair, no domi-

cile, or a meager one in an undesirable neighborhood, an empty larder, and clothes too few and tattered to make a respectable appearance, a withdrawal from environment of former associates, a disposal of personal belongings—even furniture, a proud and genteel poverty, a broken spirit, a stone wall, no known means of help or appeal, a state of prayer and bewildering hope — this is the group with whom, as president of the Physicians' Home, I have corresponded and been in contact. If their qualifications for beneficiary aid fall within our by-laws, we have accepted them as "guests," and instead of shepherding them into a home with segregation and regimentation, we send them a monthly check and allow them to live where and with whom they please. This check is sent monthly and continues unless their financial situation betters and they do not need it. In the event of death and the inability of the family and friends to finance it, we contribute toward a place of burial and decent funeral; otherwise only a public burial place would be available.

#### FAMILIAR SCENE BEST

Twice we have tried to run an organized home. It was very expensive. Very few wanted to enter it, and those who did were unhappy and disintegrated rapidly. Elderly doctors and their wives and widows seem to prefer to stay in the community in which they have worked all of their professional lives. There they have friends, old patients, and the most interests. It is true that even those in large cities desire to terminate their lives there rather than in an unfamiliar and strange countryside. A doctor prefers his own library, his chair, his bed, books, and other associations of his home to those of a more formal institution.

When our guests become incapacitated from cerebral, visual, auditory, pulmonary, cardiac, renal, and joint pathology, there is seldom adequate help in their homes to make them comfortable. They must be moved into a nursing home. This is expensive, and often the care is mediocre. Here is where the Physicians' Home is handicapped in helping guests. We simply do not have the funds on hand to pay from \$400 to \$500 a month for this care. The next problem is the difficulty of getting and keeping these doctors or their widows in hospitals. Occasionally, a hospital will place one of our guests in a free or endowed bed, but more often the patient is billed by the hospital with very little



or no reduction in its rates. Again, we cannot help to the extent we would like. The next alternative is a city, state or county institution. It is absolutely heart-rending to a family to face this situation. The usual attempt to circumvent this practical solution often ends in total financial and social disruption of a family.

The young, busy doctor says that this will never happen to him. He just does not know of the number of doctors of distinction to whom these things have happened. It has been our privilege to be able to care for very distinguished colleagues who in their active years were regarded as singularly financially successful by their colleagues. Misfortune has occurred to them, and from experience I should say it may happen to any one of us. I recently asked a member of our board of directors to call upon and ascertain the financial status of a distinguished practitioner who had held high offices and contributed the better part of his life in a tangible fashion to advancement of all phases of medicine. The director's report was to the effect that the interview was most depressing. He had known this doctor through the years of his success, admired his interest and contribution to all phases of administrative and formal medical practices, and had never dreamed he could be reduced to the object of poverty and pity that he had become.

#### NONE ARE IMMUNE

Again, this can happen to any of us. The pangs of poverty are not only depressing but seem to poison one's resistance to misfortune and, in the aged, dull the ambition to attempt rectification. These reactions may be as yet an unexplained endocrine physiologic reaction in which the reaction to stimuli of stress are altered by a psychiatric attitude and the lack of normal response in atrophic geriatric tissues. The antidote of a superior psychosomatic attitude seems lacking. The result is remorse, frustration, and futility.

These are as psychologically crushing as they are harbingers of terminal social failure. Poverty breeds anxiety which, when continued, depresses the responses of the body to stress situations and produces abnormally deficient responses which in earlier years can be met more courageously.

Again, the psychology of a physically isolated, regimented home for aged professional persons

is influenced by the impact of enforced illness and aimless existence. This is an abnormal physical and mental state to those who have been accustomed to a state of high previous professional activity. It depresses the mind and stupifies the normal processes of resistance, eventuating in an abnormal syndrome of mental disintegration and physical dissolution.

Thus, in conclusion, we may say that indigency among doctors, their wives, and widows exists in probably a greater degree than either doctors or the public realize. Because of pride it becomes known in the individual case only when it is ferreted out. Its public display is embarrassing and degrading. In a meager way the Physicians' Home has tried to help to alleviate conditions as we have found them. Doubtless more of this state exists than we know. Medicine is a proud and independent craft. We are proud to care for our own less fortunate colleagues. I hope a part of this problem has been so displayed as to arouse an active interest in preventing it.

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## EXCITING NEWS FOR HARD of HEARING

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## CANCER

**A**ERICAN Cancer Society scientists have reported that final figures on the smoking habits of 188,000 men 50 to 70 years old — 11,870 of them now dead — and their fate over a 44-month period confirm and broaden earlier interim findings.

The study, originally designed to determine whether or not there is an association between lung cancer and cigaret smoking, showed that there is a spectacular relationship between the habit and lung cancer. Moreover, it is indicated a clear-cut association between cigaret smoking and several other conditions, notably coronary artery disease, the Number One killer.

Dr. E. Cuyler Hammond, director, and Dr. Daniel Horn, assistant director of the society's statistical research, told the annual meeting of the American Medical Association that the massive, long-term study has shown that

(1) *Death rates from all causes combined* rise with the number of cigarets smoked daily — as compared with those who have never smoked, 34 per cent higher for those who smoke up to half a pack a day; 70 per cent higher for half-to-one pack a day; 96 per cent higher for one-to-two packs a day; and 123 per cent higher for two or more packs a day.

(2) *Quitting smoking* lowers the risk of death — men who had given up light smoking for more than 10 years enjoyed almost the low mortality of non-smokers; men who had given up light smoking from one to 10 years earlier had a death rate only 30 per cent higher than non-smokers as compared with 61 per cent for those who continued to smoke; those who had quit smoking a pack or more a day 10 or more years earlier died at a rate 50 per cent higher than those who never smoked, but those who continued to smoke had double the death rate of those who never had smoked.

(3) *Coronary artery disease* accounted for 52.1 per cent of all (2,665) "excess" deaths among men with a history of regular cigaret smoking; and other heart and circulatory diseases added another 5.8 per cent. Of the 11,870 deaths, 5,297 were ascribed to coronary artery disease. A total of 3,361 coronary victims had smoked cigarets regularly at one time or another — 1,388 more deaths (and a rate 70 per cent higher) than would be expected among non-smokers. As compared with the rates for

non-smokers, coronary death rates among less than half-a-pack-a-day smokers were excessive by 29 per cent, among half-to-one pack smokers 89 per cent, among one-to-two pack smokers 115 per cent, and among two-or-more-pack smokers 141 per cent.

(4) *Lung cancer* death rates were 1,000 per cent (10 times) higher among regular cigaret smokers than among men who never had smoked and accounted for 13.5 per cent of all excess deaths among men with a history of regular cigaret smoking. (57 per cent of all the men studied had a history of cigaret smoking.) Ex-smokers had less than one-half the lung cancer risk of those who continued to smoke. Considering only the cases which were proved microscopically and beyond reasonable doubt to be primary lung cancer, the death rate for those who smoked two or more packs a day was 64 times that of non-smokers. In the entire study, only four non-smokers were shown, by microscopic examination, to have died of primary lung cancer.

(5) *Lung cancer* death rates, standardized for smoking habits and age, were 25 per cent lower in rural than urban areas — a fact which suggests either better diagnosis in the cities, or the existence of urban cancer-causing agents besides those in cigarets. In both rural and urban areas, however, lung cancer rates were low among non-smokers and high among smokers.

(6) Deaths ascribed to *lung diseases other than cancer* were three times as high among cigaret smokers as among non-smokers — among cigaret smokers, death from pneumonia and influenza was almost four times the non-smokers' rate.

(7) *Other cancers* bringing elevated death rates to smokers included those of the esophagus, larynx, mouth, tongue and back of throat. To these, cigaret smokers were seven times as susceptible as non-smokers.

(8) Death rates were virtually the same for smokers and non-smokers in such categories as accidents, violence, suicide, chronic rheumatic fever, hypertensive heart disease, other hypertensive diseases, nephritis and nephrosis, diabetes, leukemia and cancers of the rectum, colon and brain.

(9) Every single one of the 51 who died of *stomach ulcer* had been a smoker — 46 of cigarets, two of pipes, two of cigars and one of both

pipes and cigars.

(10) *Overall death rates* among pipe smokers were 12 per cent, and among cigar smokers 22 per cent higher than those for non-smokers — as compared with 68 per cent more among cigaret smokers. Pipe smokers were somewhat more susceptible to lung cancer than non-smokers were.

Of the 11,870 who died, 4,406 had smoked cigaret regularly, but not cigars or pipes. If they had the death rate of non-smokers, only 2,623 would have died during the study.

Less than 1 per cent of these who had not smoked when the study began in 1952 later became regular cigaret smokers. Of those who had quit cigaret smoking before the start of the study, 7.2 per cent were regular smokers again at the end of the study. Of those who had "cut down" at the beginning of the study, 26.4 per cent again had become regular cigaret smokers at the end.

The figures showed that light smokers quit the habit or cut down much more than heavy smokers did. Former smokers who reported at the end of the study that they no longer were smoking regularly included 36.2 per cent of the less than half-a-pack-a-day smokers, 21.6 per cent of the half-to-1 pack smokers, and 13.8 per cent of the pack or more smokers. Of the regular smokers at the end of study, 28 per cent reported using filter tips.

About 20,000 volunteer workers in 394 counties of nine states (New York, New Jersey, Pennsylvania, Michigan, Illinois, Wisconsin, Minnesota, Iowa and California) enlisted in this study in November 1951. Each agreed to visit 10 apparently healthy white men between the ages of 50 and 70 years and have them describe on questionnaires their smoking habits and histories. Periodically, the volunteers checked their men and advised the society as to the status of each — living or dead. The last check was begun in November 1955.

The study was occasioned by the enormous rise in deaths from lung cancer during the 20th century. The number of deaths in the United States has doubled with every decade. This year 31,000 will die of the disease, 26,000 of them men.

Further data and interpretations will be given in future papers.

## BLOOD TESTS IN MENTAL ILLNESS

A NEW BOOK on blood tests in mental illness has been published by the Brain Research Foundation. Dr. Ladislav J. Meduna is president of the foundation and professor of psychiatry at the University of Illinois College of Medicine, Chicago.

Dr. Stig Akerfeldt, young biochemist from the Nobel Institute, Stockholm, Sweden, is the leading contributor to the new volume, which includes papers and discussions presented at the annual scientific conference of the Brain Research Foundation.

Dr. Akerfeldt's six-minute blood test for schizophrenia, the most prevalent mental illness, now is under investigation in dozens of laboratories throughout the world, Dr. Meduna said. Dr. Akerfeldt was brought to the United States earlier this year by the Brain Research Foundation to present his important new discovery to American scientists. He also appeared before the American Psychiatric Association to discuss his findings. The details of Dr. Akerfeldt's work are in the new book.

"Akerfeldt's discovery must be hailed as an important breakthrough toward finding the cause and cure of mental illness," Dr. Meduna said. "As scientists make further investigations of his test, with modifications and refinements that must always be expected when a new scientific procedure is introduced, we can look forward to getting new and practical tools for the diagnosis of mental illness."

"The even greater significance of Akerfeldt's work and that of others who are following up on it," Dr. Meduna continued, "is the indication that the majority of mental illnesses are definitely associated with detectable chemical changes in the brain. If these chemical upsets can be identified, we stand a good chance of being able to cure and possibly prevent mental illness by chemical means — that is, with drugs."

Dr. Leo Abood, of the division of psychiatry of the University of Illinois College of Medicine, is one of the American scientists who has confirmed Dr. Akerfeldt's original work. His findings are also included in the new book, along with discussion and comments from 16 leading biochemists and psychiatrists from the United States and Europe.

The publication of "Blood Tests in Mental Illness" is only one of many steps now being



taken by the Brain Research Foundation to stimulate and encourage further basic research concerning brain disorders and brain-related diseases.

"Nowhere in the world," Dr. Meduna stated, "is there a center where every type of brain disorder can be studied, diagnosed and treated. That is why the Brain Research Foundation has developed sound plans for establishing a brain institute. This pioneering institution, staffed and equipped for intense and specialized study of brain disorders, will be a model for a number of such centers throughout the nation. In spite of its importance to the human being, we still know pitifully little about the brain and its disorders. A co-ordinated approach to brain research and the treatment of brain disorders is a vital and primary objective which the Brain Research Foundation has taken upon itself."

Established in 1953, the Brain Research Foundation is a nationwide, nonprofit, voluntary organization of doctors and laymen interested in meeting the challenge of brain disorders. Offices are at 600 South Michigan Avenue, Chicago 5, Ill.

## PIMA COUNTY MEDICAL SOCIETY

### OFFICERS

June 11, 1957 to June 10, 1958

President, O. J. Farness; President-Elect, Frederick J. Lesemann; Vice President, Darwin W. Neubauer; Secretary-Treasurer, D. J. Heim.

Board of Censors, H. D. Cogswell, Chairman, David E. Engle, Lindsay E. Beaton, George Fraser, and S. J. Grauman.

Pima County Hospital Medical Advisory Board, M. A. Carreras, E. L. Kettenbach, Ian M. Chesser, Phillip Derickson, E. W. Czerny, J. R. Schwartzmann, H. D. Cochran, J. E. O'Hare.

Delegates, Clarence L. Robbins, Stuart Sanger, W. R. Hewitt, William A. Butcher, Ian M. Chesser, Wesley S. Fee, Herbert D. Welsh, Juan E. Fonseca, E. R. Updegraff, Donald N. McLeod, Jack Demlow, Frederick J. Lesemann.

Alternate Delegates, Martin S. Withers, Kenneth C. Baker, Earl R. Baldwin, Hermann S. Rhu, Robert B. Johnson, James E. O'Hare, Blair W. Saylor, L. D. Sprague, Robert W. Weber, Sherwood P. Burr, Roland V. Murphy, S. I. Shapiro.

## LOCATION OPPORTUNITIES

**ASHFORK** — Pop. 700 — North centrally located — Railroad center — Contact the Women's Club, Ashfork, Arizona.

**BENSON** — Excellent opportunity for GP — This David-Benson trade area has about 5,000 population with only one doctor available. A small sleep-in hospital can be set up very easily. Chamber of commerce will furnish telephone answering service, nine to five. Contact Ber-

nard Fisher, D.D.S., Medical Committee of the Chamber of commerce, Benson, Arizona.

**CAMP VERDE** — Located in the heart of a large farming and ranching area on the Verde River. Approximately 100 miles north of Phoenix. Badly in need of a medical doctor. Contact Ivy N. Moser, R. N., Camp Verde, Arizona.

**FLAGSTAFF** — Pop. 17,500 — Largest city in the north central Arizona trading area. One pediatrician is needed (as there are a number of general practitioners who would gladly refer work to him). Excellent opportunity for an eye, ear, nose, and throat doctor. Contact C. Herbert Fredell, M.D., Secretary, Coconino County Medical Society, 121 East Aspen Ave., Flagstaff, Arizona.

**GILA BEND** — Pop. 2,500 — 80 miles west of Phoenix — Nearest town to the Painted Rock Dam Project — Good opportunity for general practitioner. Cattle, cotton and general farming. Office and equipment available. \$150 monthly income from board of supervisors. Contact Mrs. J. F. Allison, Box 485, Gila Bend, Arizona.

**HAYDEN** — Pop. 4,000. Located in southern Arizona. Need for a general practitioner. Have only one doctor available now. Mostly industrial area. Has a local clinic — with Ray hospital 24 miles away. Contact Mr. A. J. Harriman, Kennecott Copper Company, Hayden, Arizona.

**LAS CRUCES, N. M.** — In south central part of state and not too distant from El Paso, Texas. Population is approximately 22,000, boasts state college and White Sands proving grounds. General hospital, 85 beds, fully accredited and staffed by 14 doctors. Need urologist, anesthesiologist, and obstetrician-gynecologist. For full details write A. M. Babey, M.D., President of the Staff, 250 West Court St., Las Cruces, N. M.

**MORENCI** — Mining community located near New Mexico-Arizona border — Pop. 10,000. Has vacancy at hospital for GP. Contact Carl H. Gans, M.D., Morenci Hospital, Morenci, Arizona.

**PAYSON** — Pop. 1,800 — Have completed and equipped a new clinic. Are badly in need of a medical doctor and the closest medical facilities are 80 miles away. For further information contact Mr. Walter Surrent, President, Payson Clinic, Payson, Arizona.

**TUCSON** — The VA Hospital has two vacancies at the present time — one is for an internist on the medical service and the other is for either a general or thoracic surgeon on the surgical service. State license is necessary, but not



necessarily an Arizona license. Contact S. Netzer, M.D., Director, Professional Service, VA Hospital, Tucson, Arizona.

**YOUNGTOWN** — Pop. 130 — Located 16 miles from Phoenix, four miles from Peoria, 1½ miles from El Mirage, 1 mile from Surprise, each a potential field of practice. Most residents are 60 years of age or older and are in need of medical care. Office space is currently provided at no rental. A medical center is being planned. Interested doctors may contact Mr. Sid Lambert, Box 61, Marionette, Arizona.

**YUMA** — Pop. 15,000 — Situated in the southwest corner of the state on the Colorado River — Semi-retired medical doctor, possibly a GP, may work part time or full time. He may do his own surgical procedures or may call upon local surgeons to do surgical procedures. If he would wish, he may be director of the Yuma County Health Unit which is an administrative position. Now paying \$6,600 annually for a permanent part time physician. However, it could be revised upward considerably if he would handle his own surgery and the health unit. If interested, contact Mr. R. L. Odom, P. O. Box 1112, Yuma, Arizona.

**FOR INFORMATION ON OPPORTUNITIES IN THE FIELD OF INDUSTRIAL MEDICINE, CONTACT:**

Harold J. Mills, M.D., Phelps Dodge Hospital, Ajo, Arizona.

Carl H. Gans, M.D., Phelps Dodge Hospital, Morenci, Arizona.

Ira E. Harris, M.D., Miami-Inspiration Hospital, Miami, Arizona.

Charles B. Huestis, M.D., Box 928, Hayden, Arizona.

Elvie B. Jolley, M.D., Copper Queen Hospital, Bisbee, Arizona.

H. W. Finke, M.D., Magma Copper Company Hospital, Superior, Arizona.

John Edmonds, M.D., Kennecott Copper Corporation Hospital, Ray, Arizona.

### **ADMINISTRATION HEALTH INSURANCE BILL FOR FEDERAL WORKERS INTRODUCED**

**A**FTER months of study and reworking, the administration's bill for contributory health insurance for federal civilian employees and their dependents has been introduced in congress. Un-

like the 1956 version which was only for major medical coverage, the new bill provides both basic and major coverage. To get government contributions, workers would have to take both major and basic coverage. The Civil Service Commission estimates about 1.8 million workers would elect coverage at a projected cost to the government of \$64.5 million annually.

A summary of the two major phases of the bill:

**Basic coverage** — The government would pay one-third of the premium up to 50 cents bi-weekly if insured alone, or up to \$1.50 bi-weekly if dependents are to be included; the workers would pay the balance through payroll deductions. Each employee would be free to choose any locally available group plan meeting minimum standards set up in the law; the plan could range from minimum hospitalization to a comprehensive one covering also surgical services and medical expenses. The employee could continue coverage after retirement, but the government would no longer contribute to its cost.

**Major coverage** — U. S. contribution would be a flat one-third amounting to 12½ cents bi-weekly for single workers and 37½ cents for employees with dependents; the employee share bi-weekly would be either 25 cents or 75 cents, depending on dependents. The plan would pay 75 per cent of covered hospital expenses after 70 days of hospitalization, and 75 per cent of surgical and other medical costs in excess of \$100. Benefits payable would be limited to a lifetime maximum of \$10,000 and a calendar year maximum of \$5,000 for the insured or retired worker and each covered dependent. Coverage would be continued at no cost to the employee after reaching age 65 or upon retirement.

**Other highlights:** (1) the Civil Service Commission would establish local schedules of charges for surgical operations for various sections of the country, (2) included in covered medical costs would be doctor's fees for home, office and hospital visits; special nurses, drugs and medicines, ambulance service, costly appliances such as iron lungs; (3) the commission expects that basic health plans now offering less than 70 days hospitalization will very shortly increase their daily benefits to 70 at only a nominal cost increase in premiums. Apparently, insurance could be for full coverage or indemnity.

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## BLUE CROSS, BLUE SHIELD, AHA BACK U.S. EMPLOYEE HEALTH INSURANCE

**I**N a joint statement, Blue Shield Medical Care Plans, Blue Cross Association and American Hospital Association gave their official indorsement to the measure introduced by Rep. Chet Holifield (HR 7034) for a federal employee health insurance program. The associations make these major points:

1. The U. S. government, the nation's largest employer, is lagging behind other major private employers when it fails to provide a health insurance plan for its workers. The groups point out that they "have urged for several years that federal employees should have the opportunity to participate in health insurance programs on the same basis that employees of industry do

through group programs." 2. Basic coverage is an essential in any program, the groups believe, and the Holifield plan provides this. However, the associations add that "we have agreed as well to the importance of providing extended coverage to apply against the expenses of complicated and long-term illnesses," which is part of the Holifield bill. 3. The Holifield bill provides payroll deductions, without which federal employees would not be able to qualify "for the best coverage offered." Up to this point the administration has resisted payroll deductions for U. S. employee health insurance, and it is not known whether this position has been changed.

## CONFEREES AGREE ON HEALTH BUDGET: RESEARCH STILL UP

**T**HE National Institutes of Health is getting about \$21 million more than the house allowed for the fiscal year starting July 1. This was agreed on after two meetings of senate and house conferees on the Department of Health, Education, and Welfare budget. The senate had voted \$32 million more than the house total of \$220 million for all NIH operations including lab facilities construction. But when the two

sides got together, they were able to pare down senate figures some \$11 million.

In another section of the budget, higher senate amounts for two public health service items remained untouched. These were grants to states for general health activities, and funds for communicable diseases. The following table lists final disposition of disputed items:

Agency	House Recommends	Senate Recommends	Conference Agreement
Assistance to states	\$19,592,000	\$22,592,000	\$22,592,000
Indian health activities	40,000,000	42,500,000	40,100,000
National Cancer Institute	46,902,000	58,543,000	56,402,000
Mental health activities	35,217,000	39,421,000	39,217,000
National Heart Institute	33,436,000	38,784,000	35,936,000
Arthritis & metabolic diseases	17,885,000	23,548,000	20,385,000
Neurology & blindness	18,887,000	24,058,000	21,387,000
Water pollution control	50,000,000	45,000,000	45,000,000
Communicable diseases	6,200,000	6,250,000	6,250,000

## WHO ASSEMBLY ACCEPTS U.S. INVITATION FOR 1958

**A**S expected, the World Health Assembly, governing body of the World Health Organization, has accepted an invitation to hold its session in the U. S. next year, but no city has yet been selected. Action was taken by the assembly at its meeting in Geneva. The acceptance was received by Dr. Leroy E. Burney, surgeon general of U. S. Public Health Service, who heads

the U. S. delegation to Geneva. Last year congress extended the invitation, and authorized spending \$400,000 to cover additional costs of the meeting here, away from WHO's permanent headquarters in Geneva. The assembly also asked Dr. M. G. Candau of Brazil, WHO's director general, to serve another five-year term when his present term expired July 21, 1958.



## HOLIFIELD COMMITTEE GETS CONFLICTING VIEWS ON FALLOUT DANGERS

**C**ONFLICTING testimony on the effects of radiation fallout on man marked the joint atomic energy subcommittee hearings. Scientists disagreed on whether all fallout is harmful, with greater dangers from larger doses, or whether there is a permissible "threshold." But, geneticists concurred that any radiation exposure produces undesirable mutations in humans.

Edward Lewis, a California Institute of Technology biologist, said the incidence of leukemia varies in direct proportion to the dose of radiation received and insisted there can be no threshold for radiation damage. In agreement with this, Ernest C. Pollard, a Yale University biophysicist, suggested a policy of regarding all radiation with suspicion. Lauriston Taylor, chief of the National Bureau of Standards atomic and radiation physics division, insisted on the other hand that there was still "room for motion as far as our uses of radiation is concerned."

### OTHER HEARING HIGHLIGHTS

1. Four geneticists — James F. Crow of University of Wisconsin, Bentley Glass of Johns Hopkins University, A. H. Sturtevant of the California Institute of Technology, and Nobel prize winner H. J. Muller of University of Indiana — told the Holifield committee that nuclear bomb tests already held have seriously injured hundreds of thousands of lives in future generations.

2. Dr. Muller urged the establishment of a "solid core" of geneticists in a proposed radiation health institute. Such an institute under the National Institutes of Health has been proposed by Senator Neuberger (D., Ore.) and others.

3. Atomic Energy Commissioner Willard Libby testified that bomb testing is a "small risk" that must be measured against the "risk of annihilation . . . if we surrendered the weapons." He said that scientists who have studied the data uniformly agree on the dangers and thresholds of radiation, despite contrary testimony received by the subcommittee.

## ANTIDOTE TO RADIATION EXPOSURE

**P**ARTIAL antidote to atomic radiation is claimed discovered by French AEC scientists. They

reported that rats dosed with resins (presumably of ion-exchange type) were protected largely against strontium-90, which showed little absorption into bone. Protection applied only to elements digested, not those absorbed through skin or lungs.

This news item appeared in the April 1957 issue of the *Industrial Research Newsletter* published by the ARMA Research Foundation of the Illinois Institute of Technology, Technology Center, Chicago 16, Ill. It was suggested in the news item that individuals desiring further details on this topic should contact the Business Atomic Publication, Inc., 1700 New York Ave., New York 28, N. Y.

## LABOR HITS PHYSICIANS' FEE SYSTEM

**N**elson H. Cruikshank, director of the AFL-CIO social security department, who had many a run-in with the AMA when he served as an active member of the board of directors of the Committee for the Nation's Health, shouted out recently against the practice of medicine on a fee-for-service basis.

Writing in the May 18 issue of the AFL-CIO News, Mr. Cruikshank said that physicians' attempts to maintain solo practice on a fee-for-service basis as the only proper relationship with their patients is pure "escapism." The story was based on a speech which he delivered before the Massachusetts Hospital Association.

He was quoted as saying:

"It will not work. Our problem is not as simple as how to maintain solo practice on a fee-for-service basis, or even as simple as how to destroy it.

"Our problem is how to develop arrangements under which the personal and social values which were associated with it can be preserved in the practice of 20th century medicine."

In discussing labor's interest in medical care, he said:

"The organizational and collective bargaining process must be extended into a new dimension through negotiations, agreements and arrangements with third parties — the providers of medical services and facilities. Only in this way can the job of translating health and welfare funds into better medical care be effectively accomplished."

## VA TIGHTENS UP ON WORKMEN'S COMPENSATION CASES

**V**ETERANS' Administration has tightened up its policy on hospitalization of non-service connected cases where the veteran is covered by workmen's compensation. The action follows conferences between representatives of the American Medical Association and officials of the VA and other federal agencies. The new policy applies only to treatment (on non-service connected basis) "of an occupational injury or disease incurred in or as the result of employment and (where the veterans are) entitled to necessary medical and hospital treatment elsewhere at no expense to themselves by reason of some form of industrial coverage. . . ."

Dr. Roy A. Wolford, deputy chief medical director for VA, instructs hospital managers to follow this procedure in such cases: 1. Once it has been established the veteran is covered by workmen's compensation, he will be asked to review his oath of "inability to pay" for private treatment and to agree to his transfer to another (non-VA) hospital when his condition permits. 2. If the veteran still refuses to change, he will be informed that this information will be transmitted to VA headquarters in Washington. (VA can refer such cases to the justice department for possible prosecution, although the directive does not say that this will be done.)

## NATION'S OLDEST ESSAY CONTEST

**T**HE trustees of America's oldest medical essay competition, the Caleb Fiske prize of the Rhode Island Medical Society, announce as the subject for this year's dissertation "*Hormonal Relationships In Breast and Prostatic Cancer — Their Practical Application.*" The dissertation must be typewritten, double spaced, and should not exceed 10,000 words. A cash prize of \$350 is offered. Essays must be submitted by Dec. 31, 1957.

For complete information regarding the regulations, write to the Secretary, Caleb Fiske Fund, Rhode Island Medical Society, 106 Francis St., Providence 3, R. I.

The Medical Association of the State of Illinois recently voted an allocation of \$20 per member to AMEF.

## Future Meetings

RENO SURGICAL SOCIETY,  
8TH ANNUAL CONFERENCE

Reno, Nev.

### GUEST SPEAKERS

John B. Dillon, M. D., Professor of Surgery and Anesthesia, University of California Medical Center, Los Angeles:

"Spinal and Epidural Anesthesia"

"New Drugs"

Francis Murphey, M. D., Professor of Neurosurgery, University of Tennessee College of Medicine:

"Diagnosis and Treatment of Spontaneous Occlusion of the Carotid Artery"

"Ruptured Intervertebral Disc in the Cervical Region"

John W. Cline, M. D., Associate Clinical Professor of Surgery, Stanford University School of Medicine:

"Surgical Aspects of the Common Duct"

"The Significance and Treatment of Nodules of the Thyroid Gland"

Fred J. Hodges, M. D., Professor and Chairman of Radiology, University of Michigan:

"X-ray Detection of Colonic Cancer"

"Radiology's Debt to Surgery"

Carleton Mathewson Jr., M. D., Professor of Surgery, Stanford University School of Medicine:

"The Management of Penetrating Wounds of the Colon"

"Massive Hemorrhage from Gastroduodenal Ulceration"

K. Alvin Merendino, M. D., Professor of Surgery, University of Washington School of Medicine:

"Further Experiences with Jejunal Interposition Operation in the Treatment of Esophagitis, Cardiospasm, and other Diseases of the Esophagogastric Junction"

"The Life History and Treatment of Abdominal Aneurysms with Seamless Teflon Fabric"

E. G. Holmstrom, M. D., Professor and Head of Department of Obstetrics and Gynecology, University of Utah:

"Amenorrhea"

"Functional Uterine Bleeding"

Otto E. Aufranc, M. D., Assistant in Ortho-

pedic Surgery, Harvard Medical School and Massachusetts General Hospital:

"Reconstructive Surgery of the Hip using Prostheses and Cups and the Indications for Each"

"Surgical Treatment of Sepsis after Reconstructive Surgery of the Hip"

#### LUNCHEON SPEAKER, AUG. 22

Raymond I. Smith, Manager Harolds Club:

"Gambling As Seen Through the Eyes of a Professional Gambler"

#### BANQUET SPEAKER, AUG. 23

Tom Harmon, Sports Director, Columbia Pacific Network.

#### SOCIAL EVENTS

Pre-Meeting Cocktail Party, Wednesday Evening, Aug. 21 — Holiday Hotel.

Luncheon, Thursday Noon, Aug. 22 — Hotel Mapes.

Cocktail Party, Thursday Evening, Aug. 22 — Harolds Club.

Luncheon, Friday Noon, Aug. 23 — Hotel Mapes — Round Table Discussion.

Banquet, Friday Evening, Aug. 23 — Riverside Hotel.

### UTAH STATE MEDICAL ASS'N.

#### 62nd ANNUAL SCIENTIFIC MEETINGS

Sept. 5, 6, 7, 1957 — Salt Lake City

#### ENTERTAINMENT

Wednesday evening, Sept. 4:

Annual Dinner Meeting for stockholders of Medical Service Bureau. (Blue Shield).

6 p.m. — Social Hour — Crystal Ballroom — Hotel Newhouse.

7:30 p.m. — Dinner — Bonneville Room — Hotel Newhouse.

Thursday evening, Sept. 5:

President's Reception — Alta Club — 5-7 p.m.

President's Banquet — Lafayette Ballroom — Hotel Utah, 7:15 p.m.

Featured Guest Speaker — Gunnar Gunderson, M.D., President-elect, American Medical Association.

Dancing — Junior Ballroom, Hotel Utah — (Informal).

Friday evening, Sept. 6:

Dinner meetings sponsored by the following societies with our guest speakers in attendance:

Intermountain Pediatric Society

Salt Lake Surgical Society

Utah Chapter American Academy of General Practice

Utah State Society of Anesthesiologists

Utah Society of Internal Medicine

Utah State Obstetrical and Gynecological Society

Special Luncheons — Hotel Utah

Panel discussions with local and guest speakers participating.

Thursday — Starlite Roof Garden — 12:10 p.m.

Friday — Empire Room — 12:10 p.m.

#### LADIES ENTERTAINMENT

Thursday, Sept. 5 — Hotel Utah

9 a.m. — Registration

9-10 a.m. — Hospitality hour

10 a.m. — Meeting — Welcome Stranger

1 p.m. — Luncheon — Ft. Douglas Club

Friday, Sept. 6:

10 a.m. — Brunch — Home of Mrs. Reed S.

Clegg

### SEVENTH CONGRESS PAN-PACIFIC SURGICAL ASS'N.

The Seventh Congress of the Pan-Pacific Surgical Association to be held in Honolulu, Hawaii, Nov. 14-22, 1957. For information, write Dr. F. J. Pinkerton, Director-General of the Pan-Pacific Surgical Association, Suite 230, Young Building, Honolulu, T. H.

#### MEDICAL SOCIETY OF THE UNITED STATES AND MEXICO

The next meeting of this organization is to be held at the Pioneer Hotel, Tucson, Arizona, Dec. 5, 6, and 7, 1957.

#### ARIZONA MEDICAL ASSOCIATION MEETING, 1958

The 1958 meeting of the Arizona Medical Association is to be held in Chandler, April 30, May 1, 2, and 3, 1958.

**Office Space For Rent**  
**31 West Camelback Rd.**  
**Phone CR 7-3337**

## OBITUARY

FRANK A. NELSON, M.D.

1897-1956

**F**RANK Arleigh Nelson was born Jan. 3, 1897 in Boise, Idaho and his childhood was spent in the farming area of that region. He served in the United States Army through World War I and attended the University of Nebraska for premedical and medical training, graduating in June 1923. This was followed by an internship after which Dr. Nelson entered private practice in southeastern Nebraska, a course he pursued for eight years until he entered the United States Indian Service in the capacity of senior physician. He served as the head of a number of hospitals on the reservations in various Rocky Mountain states. His last assignment

in the Indian Service was as senior physician for the United States Indian Hospital in Phoenix, Arizona.

Dr. Nelson resigned from the United States Indian Service in January 1944 to accept a position with the Phelps Dodge Corporation at the New Cornelia Hospital, Ajo, Arizona. He continued the practice of medicine at this hospital, assuming the position of chief surgeon in July 1955, a position he held at the time of his death on Oct. 28, 1956, due to myocardial infarction.

His close associates had warm admiration and high respect for him both personally and professionally.

H. J. MILLS, M.D.





## Phoenix Clinical Club

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

### MASSACHUSETTS GENERAL HOSPITAL

#### PRESENTATION OF CASE 31162

**F**IRST admission. A 54-year-old shoe cutter was admitted to the hospital because of swelling of the abdomen.

One year prior to admission the patient developed a generalized itching unassociated with any skin lesion or jaundice. About two months later he noted increasing tiredness, although he was able to continue working. About six months before entry he noted swelling of the legs brought on by standing for any length of time and disappearing after a night in bed. Soon thereafter he noticed that the abdomen was swollen and continued to enlarge, and a protrusion developed in the region of the umbilicus. Three months prior to entry he developed increasing dyspnea on exertion. A physician prescribed diuretic pills, following which the patient lost about 20 pounds in a few days. His abdomen, however, did not appreciably decrease in size. There was no history of gastric discomfort except for gaseous eructations after meals, and no hematemesis, melena or unusual stools. He had lost a "considerable" amount of weight over a period of six months.

The patient had been a rather heavy drinker of beer, augmented with whisky and rum, before the onset of his symptoms. There was no history of exposure to drugs and chemicals other than alcohol. He had typhoid fever at the age of 20. One and a half years before admission he had a high-vein ligation in the right leg, and the veins of the left leg were injected at the same time.

Physical examination revealed a rather frail sallow man showing evidence of considerable weight loss. The lungs revealed fine moist rales at both bases, and diminished breath and voice sounds over the entire chest. The diaphragm

was high, bilaterally. The heart sounds were clear, with splitting of both sounds and a questionable systolic murmur at the apex. The abdomen was markedly distended and tense, with shifting dullness and a fluid wave. A completely reducible umbilical hernia was present. No organs or masses were felt. A massive left scrotal hernia, completely reducible, was present. Both legs revealed evidence of stasis dermatitis. There was pitting edema of both feet, and induration of both legs to the knees. The knee and ankle jerks were not elicited, but other reflexes were normal. The temperature was 98° F., the pulse 90, and the respirations 22. The blood pressure was 112 systolic, 70 diastolic.

Examination of the blood revealed a red-cell count of 4,300,000, with 12 gm. of hemoglobin, and a white-cell count of 7,700, with 76 per cent neutrophils. The urine was negative. The serum nonprotein nitrogen was 31 mg. per 100 cc., the protein 5.6 to 6.8 gm., with an albumin-globulin ratio of 1.05, and the chloride 95 milliequiv. per liter. A bromsulfalein test showed retention of 30 per cent of the dye. A cephalin flocculation test was + after 24 and 48 hours. Venous pressures taken in the antecubital space and femoral vein were equivalent to 18.5 and 14.5 cm. of water, respectively, on one occasion and to 20.5 cm. in both places on another. Fluid removed from the left chest had a specific gravity of 1.012, with a cell count of 1,419 red cells and 138 white cells, of which 22 per cent were neutrophils, 76 per cent lymphocytes and 2 per cent eosinophils. Fluid from the abdominal cavity had a specific gravity of 1.014, with a cell count of 2,610 red cells and 550 white cells, practically all of which were lymphocytes. The latter fluid contained 4.2 gm. of protein per 100 cc., and both the chest and ascitic fluids were negative for tubercle bacilli on smear and guinea-pig inoculation and for tumor cells. A sputum examination was negative for tubercle bacilli on smear. A blood Hinton test was negative.

A roentgenogram of the chest revealed a heart that was slightly enlarged but was within the limits of normal by measurement. There was a considerable amount of fluid in both pleural cavities. No liver shadow could be made out, and the hepatic flexure came almost to the diaphragm. The spleen was not enlarged. A

barium swallow revealed a normal esophagus without evidence of obstruction or varices.

An electrocardiogram showed slight right-axis deviation. There were low-voltage QRS complexes and flat T waves in the standard leads.

The patient was placed on a high-calorie, high-vitamin diet with fluids restricted to 2,000 cc. daily. A peritoneoscopy was performed on the third hospital day. The right lobe of the liver presented a rounded edge that was just below the costal margin. The left lobe presented a rounded edge that extended down to the level of the umbilicus. The surfaces of both lobes were extremely irregular and in places hobnailed, and they were covered everywhere with innumerable white, pinpoint tubercles. Some of these tubercles were seen on the peritoneal surface of the abdominal wall, overlying the left lobe of the liver. The transverse colon, small bowel and omentum in the upper part of the abdomen were involved in a red inflammatory mass in which there were a few tubercles. The lower abdomen appeared essentially negative. A biopsy specimen from the anterior surface of the left lobe of the liver showed no obvious abnormality.

On the 10th hospital day a paradoxical pulse was noted, and two days later a pericardial friction rub was heard. A fluoroscopic examination of the chest at that time revealed a small cardiac beat and no localized enlargement. There was no evidence of pericardial calcification, but there seemed to be some evidence of pericardial adhesions about the heart. The circulation time (arm-to-tongue) was 30 seconds. In spite of these findings, the patient continued to improve. He gained 15 pounds without significant accumulation of ascitic fluid, and was discharged to his home on the 30th hospital day.

Second admission. (two months later). Following his discharge, the patient felt well except for persistent exertional dyspnea and some increase in abdominal distention. He gained about 10 pounds. He was readmitted for reevaluation of his condition with a possibility of operation.

Physical findings were essentially unchanged except that the pericardial friction rub was no longer heard. The heart sounds were muffled. The pulsus paradoxicus was still present. The neck veins were pulsating and distended, there was considerable ascites and edema of the legs and feet, and the superficial veins of the abdo-

men were prominent. A roentgenogram of the chest showed no definite change. Several chest and abdominal taps were performed and the patient was given injections of Mercupurin to relieve him of some of the fluid.

On the 28th hospital day an operation was performed.

HOWELL RANDOLPH, M. D.:

This 54-year-old shoe cutter was admitted to the hospital because of swelling of the abdomen. This swelling was quite extensive over a period of a year, beginning about a year and a half before. About one year before, there had been itching of the skin without development of jaundice or any skin lesions. The gradually increasing edema of the abdomen was persistent and was associated with dependent edema of the lower extremities. There was never any hemorrhage into the gastrointestinal tract. The physical examination on the two admissions showed the persistence of enlargement of the abdomen, but there was loss of general body weight. There was increasing shortness of breath with the increasing abdominal distention.

Past History: Typhoid at the age of 20. He has been a heavy consumer of alcoholic beverages, principally beer, but also whisky and rum. So far all of the facts regarding this patient seemed to point toward diagnosis of cirrhosis of the liver. Then, in addition to this, the peritoneoscopy showed "nodular liver." The bromsulfalein retention test showed 30 per cent dye retention, but the cephalin flocculation was negative. At the same time, the peritoneoscopy showed what looked like tubercles over the surface of the liver and the viscera of the upper abdomen, but the biopsy of the liver was reported as negative. Following on through the history, we find that many of the other findings are consistent with cirrhosis of the liver; the absence of fever, a moderately elevated pulse rate; the reduction of serum albumin and serum protein; also the specific gravity of the fluid, 1.012, in the abdomen and the large number of WBA and RBC found in both pleural and peritoneal fluids is not inconsistent.

The patient's treatment was a high calorie and high vitamin diet, as usually prescribed in liver disease. Prominence of the superficial veins of the abdomen is very suggestive of portal cirrhosis. The very fact that the patient was operated on the 28th hospital day is not inconsistent with a diagnosis of cirrhosis of the liver.

A recent description of a post-necrotic cirrhosis of the liver may be of interest. This consists of a type of cirrhosis characterized by fibrotic bands separating areas of parenchymal hepatic tissue, in contrast to the diffuse fibrosis involved in Laennec's cirrhosis.

Could tuberculous peritonitis have been present? No tuberculin test is recorded. No tubercle bacilli were found in the fluids of guinea pig inoculation or smears. There was no fever recorded.

There was no record of this patient having passed through a period when tuberculosis could have been active.

No, I do not think that active tuberculosis is present.

Could these "tubercle formations" have represented carcinomatosis lesions?

I am inclined to rule this out on the basis of the fact that most assuredly a biopsy of the lesion would have yielded a diagnosis, and the absence of cells in the fluids.

Now, reviewing the case from the standpoint of a cardiac lesion, we might list the symptoms as fatigue, starting a year before admission, with increasing tiredness. The edema, which has been noted before is consistent with cardiac failure. The dependent edema is quite characteristic. Later abdominal swelling was persistent and gradually increasing. The shortness of breath increasing for three months with the presence of abdominal fluid. There was a good response to diuretics.

On physical examination, the man was frail and had undergone weight loss in spite of the edema. The breath sounds were diminished over the chest and there was fluid accumulation in the pleural spaces as well as in the abdomen, which suggests cardiac decompensation. A questionable systolic murmur was present at the apex. There was some question of the disappearing friction rub on two different admissions. If the size of the heart was not particularly increased on the x-ray, what type of heart disease would explain the edema in the absence of renal failure? There was no hypertension, no rales, and no evidence of cardiac enlargement. There was no primary agent that might have caused myocarditis. All of these findings are consistent with diagnosis of constrictive pericarditis, and in addition, certain factors seem to point toward this diagnosis. The special prom-

inence of the accumulation of fluid in the abdomen at an early date is suggestive. By the time severe generalized edema has occurred in heart disease, the heart is almost always enlarged unless there is some reason for maintaining its narrow diameter. The rather low pulse pressure of 42, and the fairly rapid pulse of 90, is suggestive. The electrocardiograph pattern described is a perfectly typical textbook picture of constrictive pericarditis, with right axis deviation, low voltage of QRS complex and flattened T-waves. The T-waves may be slightly inverted. A very suggestive finding is the paradoxical pulse. This is caused by a sharp drop in the systolic blood pressure during inspiration. An attempt should be made to record the level of the systolic pressure and the number of points it drops with inspiration. Another sign which might have been helpful would be the finding of calcium in the pericardial shadow. No mention is made of this in the chest x-ray. Still another finding which is not explained by cirrhosis of the liver, is the high venous pressure both in the arm and in the femoral vein. Normal is 7-10 instead of 20½ as recorded here. A retraction of the inter-spaces posteriorly in the inferior chest is present sometimes in adhesive pericarditis and when fluid is present, this could be obscured.

The report of a friction rub at one admission, and two months later its absence, is a bit disturbing in that one would expect that this adhesive pericarditis had been present for some time and no space would be left for the friction sound. However, if definite friction sound is heard, there can be no question about the presence of some degree of pericarditis. Give-away findings might have been recorded if further studies of the x-ray with absence of shift on posture, had been recorded. Usually, also engorgement of the veins of the upper extremities and neck is present, and must have been present in our patient, in view of the increased venous pressure, although it is not mentioned in the physical examination. The usual methods of treatment of cardiac failure are ineffective in pericarditis. Diuretics bring about only temporary improvement. Up until 1940 relatively few patients had been subjected to surgical treatment, but now many cases have been reported and the operation has become relatively standardized. The excision of the pericardium must include the band around the venous structures of the auricles. Difficulties are encountered in sep-



arating the pericardium from the heart at times, and releasing the auricles and the venous structures present a problem when no line of cleavage can be determined. Immediately after release of the constricted pericardium however, the patient's cardiac output is so promptly increased that postoperatively the patients do very well.

While it is difficult to differentiate cirrhosis of the liver, in the presence of nodular liver such as we have here, and adhesive pericarditis, in this particular instance we have instead of enlargement of the liver, an apparent contraction of the liver, therefore, it seems rather tempting to indulge in the pastime so often attributed to amateurs of making a diagnosis. However, although I do believe there is some degree of cirrhosis of the liver in this case, nevertheless, the primary disease of adhesive pericarditis could have been a factor in producing this liver change.

*Diagnosis:* Adhesive pericarditis. Secondary cirrhosis of the liver with passive congestion.

*Operation:* Pericardiectomy.

**R. LEE FOSTER, M. D.:**

We are presented here essentially with the case of a 54-year-old man, whose presenting symptom was swelling of the abdomen. Over the past year he had developed generalized itching, increasing tiredness, dependent edema, and apparently a polyserositis. At least the physical findings indicated abdominal ascites and bilateral pleural effusion, and very likely some pericardial effusion near the end. The pericardial effusion we are not very sure of, but there seems to be considerable evidence of pericardial adhesions. There is a somewhat enlarged "hob-nail" liver without evidence of splenic enlargement. Of course, this patient had as enumerated by this long protocol, numerous other symptoms, physical findings, and laboratory findings, but these are the cardinal ones. He had several diagnoses also, complete within themselves, such as for example the left scrotal hernia, the reducible umbilical hernia, and the stasis dermatitis of both legs. These we will accept and forget. To attempt to run a differential diagnosis on each of the outstanding symptoms on this patient would lead us far afield and into the consideration of numerous diseases. There are many diseases, for example, which may cause generalized pruritis. There are many disease which may

cause ascites, and there is another group of diseases associated with enlarged liver, and other groups which may be responsible for the other symptoms and findings mentioned. I can think, however, of one outstanding condition which may have, and usually does, all of these findings which I have enumerated. I refer to Friedel Pick's disease and particularly the clinical variety usually referred to as a chronic constrictive pericarditis. I shall spend most of my time therefore trying to make a good case for this diagnosis and very briefly dispose of other conditions which do need to be considered. I found the best description in the fewest words in Cecil's Textbook of Medicine from which I now quote.

"Dyspnea, swelling of the abdomen and occasionally edema of the ankles (usually not in proportion to the abdominal enlargement) are the characteristic symptoms encountered in chronic constrictive pericarditis. Increasing prominence of the cervical veins may be noted and sometimes there is swelling of the face. General weakness and low-grade fever are occasionally present.

*Physical Signs* — Inspection reveals conspicuous engorgement of the veins of the neck (the venous pressure may be 20-45 cm. of water, i.e., two to five times the normal). The distention of the veins is often present in the sitting, as well as in the recumbent position. Cyanosis of the lips and nail beds may be present. Inspiratory swelling of the veins of the neck is a common and important sign. Orthopnea is inconstant. There is moderate or even extreme enlargement of the abdomen usually with a fluid wave. Pitting edema of the legs and ankles is often found. The liver is regularly enlarged and firm, but usually it is not tender and does not pulsate. Splenomegaly rarely occurs. The pulse is small, the systolic blood pressure and pulse pressure are characteristically low, or within the lower limits of normal. Pleural effusion is commonly present. The fluid, like that found in the abdomen, usually has the characteristics of a transudate.

The heart is usually small and quiet. In most cases, the rhythm is regular, but irregularity arising from auricular fibrillation or extrasystoles is sometimes encountered. The sounds may be distant, but otherwise are of normal intensity. Systolic apical murmurs may be present.

The electrocardiogram is helpful in the recognition of chronic constrictive pericarditis. Usu-



ally there is low voltage of QRS complexes; and the T waves of lead 1 and lead 2 are frequently of low amplitude, or negative. If the heart be immobilized by adhesions, the electrical axis may not alter with change of position of the body, as pointed out by Dieuaide, but fixation of the electrical axis is by no means pathognomonic. The detection by x-ray of calcareous deposits encircling the heart is practically pathognomonic of adherent pericardium. The cardiac silhouette is usually of normal size, though marked thickening of the pericardium may suggest hypertrophy or dilatation. Decrease in the amplitude of the pulsations of the heart, particularly of the right border, is the usual fluoroscopic finding."

This then, I submit, is almost a duplicate description of our present protocol. A few small things are lacking, such as calcification within the pericardium so far as could be told. Without taking your time therefore to point out the numerous points of agreement and to defend or to explain away the few small points of disagreement, I submit this as my diagnosis and take only the remaining few minutes to eliminate some of the competing diagnoses. Polyserositis or general tuberculosis of the serous membranes is the most serious contender. The description of tubercles on the liver and in the various portions of the abdominal cavity as viewed by peritoneoscopy is certainly suggestive. However, the negative cultures, smears, and guinea pig inoculations in the pleural and ascitic fluids, as well as the negative sputum examination is very strong evience against this. Also we would assume that the peritoneoscopist would have biopsied the liver at the site of at least one of these tubercles, and the pathologist did not find any evidence of tuberculosis. I therefore dismiss this diagnosis for lack of other confirmatory evidence.

The group of lymphomata must be considered, including Hodgkin's disease, Hodgkin's sarcoma, lymphosarcoma, and such. Any one of this group can be responsible for many of the symptoms and findings which this patient had. I do not find, however, any mention made of any mediastinal lymphadenopathy, or in fact any mention made of any lymphadenopathy anywhere. I discard this group then without much feeling. Malignancies of various kinds, either primary or secondary to the body cavities must also be con-

sidered, but no tumor cells were found in any of the fluids obtained, no tumor cells were found in the liver biopsy, and the patient had no outstanding disturbances of any of the body systems to suggest malignant etiology. I discard then malignancies as a group.

Theoretically beriberi heart could give many of the symptoms and signs which this patient had, but in spite of the history of alcoholic intake, there is no clear-cut history of dietary deficiency, peripheral neuritis, tenderness and atrophy of the muscles, etc., which are found with beriberi heart. Also, this patient has many things not usually found with a beriberi heart per se.

Cirrhosis of the liver and particularly portal cirrhosis deserves mention. The history of alcoholism, the enlarged liver, and the ascites demand that we mention this. It is hard, however, for me to fit the cardiac picture into this diagnosis.

My diagnosis is, then, (1) Friedel Pick's disease, or chronic constrictive pericarditis, and I believe the operation performed was probably a pericardial resection.

#### *Differential Diagnosis*

*Dr. Conger Williams:* The generalized itching without jaundice did not mean much to me in the light of what happened later, so I shall overlook it for the moment.

In the differential diagnosis of ascites, it is important to know whether or not there is leg edema and, if so, what the time relation of its onset is to that of the ascites. We are told here that swelling of the legs came on before the ascitic swelling was noticed. When the cause of ascites and leg edema is intra-abdominal, ascites develop first and leg edema later, owing to pressure of fluid on the intra-abdominal veins. If, however, both are due to heart failure, edema of the legs commonly appears first. In the case of constrictive pericarditis, ascites is often out of proportion to the amount of leg edema and may appear first. In this case, the sequence of events is unusual for heart failure in that signs of peripheral congestion preceded dyspnea.

Obviously the diagnosis of cirrhosis of the liver was considered because of the history of alcoholism, but a search for esophageal varices was negative. The appearance of fluid in the legs before the development of ascites is also

against the diagnosis. I suppose that the patient had varicose veins, but it does not say exactly why the vein was ligated. Obviously the injection was done for varicosities, whether or not he had had thrombophlebitis, we do not know.

In brief, the cardiac findings on physical examination were not remarkable. Obviously the degree of ascites was out of proportion to the degree of leg edema.

We know nothing about the course of this man's temperature, either before or after admission.

In the differential diagnosis of edema, determination of the serum protein should be a routine procedure. The value of 5.6 to 6.8 gm. per 100 cc. is a little on the low side, but not low enough to be significant.

Thirty per cent dye retention in the bromsulphalein test is a moderately abnormal finding, but it is found in cases of simple liver congestion, without much in the way of parenchymal liver disease. Also, the cephalin flocculation test was equivocal, and can be explained on a basis of liver congestion alone.

The venous pressure readings were abnormally high, a finding of greater importance in making the differential diagnosis than any other reported physical or laboratory finding. I shall discuss it later in greater detail.

The characteristics of the abdominal fluid suggest an exudate rather than a transudate. The protein was high, the specific gravity was fairly high, and the cell count suggests more of a lymphocytosis than one expects from an ordinary bloody tap. So it is likely that a factor other than increased venous pressure was active in the production of ascites. The question of infection with tubercle bacilli is one of the most important things to consider in the differential diagnosis of ascites. A negative finding, however, especially on examination of the sediment of the ascitic fluid, means nothing. I think one can say that in tuberculous peritonitis one seldom gets a positive smear for acid-fast bacilli. Furthermore, it has been said that guinea pig inoculations are positive in only about 50 per cent of the cases. Thus, the negative findings in both of these determinations mean little. Also, the fact that the sputum was negative for tubercle bacilli is of little consequence.

*Dr. Laurence L. Robbins:* I have not been

able to find the films taken on the first admission. I gather, however, that there was no change in the appearance of the heart or lungs. Someone made the statement that the heart was within normal limits of size by measurement. In none of these films is it possible to see the cardiac shadow sufficiently to be certain of it. This observation must have been made by the fluoroscopist. The fact that there was a small beat is of some importance.

*Dr. Williams:* How about a large amount of pericardial fluid? Is that possible with this sort of right border?

*Dr. Robbins:* It depends on how much you mean by a "large amount." There can be a lot of fluid in the pericardial cavity even with that configuration.

The lung fields are not remarkable. So far as I can see, there is no evidence of disease in the lower and upper lobes, other than this linear fibrosis in the apices which indicates a previous infection.

*Dr. Williams:* Is this shadow the septum of the middle lobe?

*Dr. Robbins:* Yes; with some fluid extending into it.

*Dr. Williams:* These pictures are not particularly helpful, but I did not expect them to be. We know that he had fluid in the chest because of the findings on physical examination and because of the fact that a goodly amount was withdrawn.

I saw the electrocardiograms, and the low voltage and the flat T waves are suggestive of pericardial involvement, which fits in later in the differential diagnosis.

I wonder whether the apparent hobnailed surface of the liver was related to the tubercles on the peritoneal surface. The record states that the biopsy showed no apparent intrahepatic disease. I do not believe that that means much one way or another. It is definitely stated, however, that tubercles were seen on the edge of the liver. The question I should like to raise is: Were these real tubercles, or something simulating them? It is well known that widespread carcinoma may mimic tuberculosis, in the gross at any rate. We have no report of a histologic examination. I think it most probable, however, that these were real. The description of the transverse colon sounds like localized tuberculous in-

fection in the abdomen.

A paradoxical pulse was noted. The question here is whether it actually appeared at that time, or whether it was noted for the first time, having been present previously. It seems unlikely that a paradoxical pulse would develop so fast, unless, there was a considerable amount of pericardial effusion. The x-ray picture suggests that the effusion, if any, was insignificant. Since there apparently was no great change in the blood pressure, and no sudden change in the clinical state, I am doubtful about the presence of pericardial tamponade. I suspect that pericardial involvement had been present for some time before the onset of symptoms, and that the paradoxical pulse was also present long before it was observed for the first time. The friction rub suggests that there was acute inflammation of some part of the pericardium. Of course, that often takes place in the presence of old pericardial fibrous changes. The small amplitude of heart beat may have been due to old pericardial adhesions. The absence of pericardial calcification means nothing in deciding the presence of constrictive pericarditis.

It is quite likely that dyspnea at the time of the second admission, as well as on previous occasions, was due to an accumulation of fluid in the chest. Also, dyspnea is a symptom of constrictive pericarditis.

In describing a paradoxical pulse, the variation in systolic blood pressure between inspiration and expiration should be recorded. A good many normal people have a paradoxical pulse of slightest degree, and it is often quite marked in bronchial asthma. The use of the term, "pulsus paradoxicus" without qualification is not especially helpful. In this case, however, the finding is significant, especially in association with distended and pulsating neck veins. The later observation was not recorded until the second admission, but the high venous pressure measurement suggests that visible venous pulsations in the upright position were also present at the time of the first admission.

I wonder whether the operation mentioned was an abdominal or thoracic procedure. Abdominal exploration is sometimes performed in tuberculous peritonitis. I suspect, however, that this was a thoracic operation and that it probably consisted of a pericardial exploration, because everything in the history points to a diagnosis of constrictive pericarditis — a high venous

pressure in association with ascites, leg edema, and the finding of a paradoxical pulse. Also the electrocardiographic findings are typical, and the absence of normal pulsation on fluoroscopic examination is suggestive. Also significant is the apparent absence of intracardiac involvement to explain the high venous pressure. I am therefore practically forced to accept the diagnosis of constrictive pericarditis.

The next question is, what is the relation of this to an apparent tuberculous peritonitis? Was the constrictive pericarditis also tuberculous, or was it the much more frequent nonspecific pericarditis, complicated by tuberculous peritonitis? It is more logical to suspect that the picture can be explained on the basis of a long-standing tuberculous constrictive pericarditis in association with tuberculosis of other serous surfaces, including the pleura and peritoneum. Tuberculous peritonitis alone does not explain the increased venous pressure and the findings in the lungs, unless one assumes that there was an independent tuberculous pleural process going on. We therefore must assume that something was going on outside the abdomen. One might say that the absence of fever and the increased white-cell count are perhaps against the diagnosis of tuberculous peritonitis, but we do not have a detailed record of the temperature. It is possible to have this picture caused by tuberculosis and at the same time to have a normal temperature. It is not usual, however, to have a high white-cell count in association with tuberculous peritonitis.

If this is tuberculosis, and it seems likely that it is, the next question that comes up is: Where was the original focus? So far as I can tell, it was not in the lungs; perhaps it was in the mediastinum or elsewhere. It is true that cases like this usually have an obvious primary tuberculous focus. All I can say is that it just was not found.

#### CLINICAL DIAGNOSES

Polyserositis, with chronic constrictive pericarditis.

Bronchopneumonia.

#### DR. WILLIAMS'S DIAGNOSES

Tuberculous constrictive pericarditis.

Tuberculous peritonitis.

#### ANATOMICAL DIAGNOSIS

Polyserositis.



### PATHOLOGICAL DISCUSSION

*Dr. Ronald C. Sniffen:* I am sorry that Dr. White is not here, since he followed this patient rather closely through his medical career. Neither is Dr. Sweet, who performed the operation. Before he operated, Dr. Sweet made the remark that this type of case was most unfavorable for pericardiolysis, as judged from the experience of this clinic and others, because of the obvious activity of the process. But in view of the patient's continued downhill course, he did operate and found a constrictive pericarditis. Thereupon he removed strips of the thickened pericardium from the anterior surface. After operation the patient did extremely well for a few months. It was seven months before he came in again, at which time he was in much the same condition as before operation. It is a little unusual for a patient to do well postoperatively and then fail rapidly within a few months. Generally speaking, if the operation is not helpful, there is no postoperative interval of improvement.

At the time of death the patient showed peripheral edema of the lower extremities to the knees. He had prominent neck and chest veins. In the distended abdomen there were umbilical and left inguinal hernias. The abdominal cavity was striking in that all the peritoneal surfaces were greatly thickened and appeared milky. This process involved the liver and spleen, and had produced adhesions around these organs. The serosa of the gastrointestinal tract was tremendously thickened, but there were no adhesions between the various loops of bowel. The liver weighed 1,980 gm. and, on section, showed a distinct lobular architecture, and was quite tough. Microscopically the liver showed advanced central congestion and necrosis leading to an early cardiac cirrhosis. Each pleural cavity was largely obliterated by fibrous adhesions and contained about 100 cc. of fluid. There were also adhesions between the medial surfaces of the lungs and the pericardium. The entire pericardium was tremendously thickened, and the heart was fixed to the anterior chest wall and to the posterior mediastinal structures. The thickening was most impressive over the auricles, especially the right, where it measured as much as 1 cm. The orifice of the superior vena cava was narrowed to slightly more than 1 cm. in diameter. The orifice of the inferior vena cava, however, was capacious, measuring 3 cm. in diameter.

The hepatic veins entering the inferior vena cava were not appreciably narrowed. The heart itself was not enlarged, and revealed no intrinsic disease.

A blood culture and clutres of the fluid from the various cavities were negative, and guinea pig inoculations were negative. Sections from the various serous surfaces showed a nonspecific subacute inflammatory process, with the laying down of many layers of collagen.

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